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ABSTRACT

This study identified structural units of language as they appeared in the speech of two- to five-year-old preschool white children in Brisbane. Electronic equipment was used to record the speech samples, which were transformed into three separate language concordances by computer analysis. These structural units of language were then compared with those evident in the speech of four-year-old aboriginal children. The evidence suggested that the development of structural units of standard Australian English manifested by the aboriginal children was well below that of average white children. References are made to some implications for the development of compensatory language programs for aboriginal children. (HOD)

DEPARTMENT OF EDUCATION

QUEENSLAND

VAN LEER PROJECT

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BERNARD VAN LEER PROJECT

RESEARCH REPORT
ON
SOME ASPECTS OF THE LANGUAGE DEVELOPMENT OF PRE-SCHOOL CHILDREN

DECEMBER, 1970

Department of Education,
P.O. Box 33,
NORTH QUAY, Brisbane, 4000.
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FOREWORD

This report, as do most reports of research in education, reflects the contributions of many persons and institutions. The Bernard Van Leer Foundation, 52 Koninginnegracht, The Hague, made a major contribution by providing the funds for the project of which the research study here reported is a part.

The children, parents, teachers and administrative staff of the Cherbourg and Palm Island communities, together with the community councils, also played major roles. So too did the children, parents and kindergarten teachers involved in the recording of samples of the language of the two-year, three-year and four-year old Brisbane children.

The committee supervising the Van Leer Project in Queensland, Dr Hart, Miss Cutridge and Miss Watts, working with our former director of the project, Mr W. Wood, unselfishly devoted long hours to the planning and conduct of the project. The field workers, Dr E.A. Drinkwater, Miss Koppe and, in the earlier phase of the project, Mr Parry and Dr Sharpe, tirelessly and enthusiastically undertook the many and varied activities associated with such an undertaking. The clerical assistants, Miss Hendriksen, Mrs Murray and, earlier, Mrs Hart, similarly spared no efforts to bring this stage of the project to fruition.

Valuable assistance and guidance were provided by officers of the Research and Curriculum Branch as well as other sections of the Department of Education. Likewise the co-operation of the Department of Aboriginal and Island Affairs facilitated many of our activities.

Although they are too numerous to name individually, the contributions of the many other persons and organizations are sincerely acknowledged.

It is hoped that the report of the research study contained in this publication will be of assistance and interest to a wide audience.

M. D. Alford

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BERNARD VAN LEER PROJECT RESEARCH REPORT ON SOME ASPECTS OF THE LANGUAGE DEVELOPMENT OF PRE-SCHOOL CHILDREN

CONTENTS

LIST OF TABLES

SUMMARY

INTRODUCTION

A pilot investigation involving young Aboriginal children suggested that a major cause of their scholastic retardation was inadequacy of language reception in the pre-school years. Previous research conducted in Queensland indicated that this situation could be improved by the implementation of specially devised language development programs.

In view of the observed failure of Aboriginal children to use the commonly accepted structural forms of the English language it was proposed that compensatory language programs should be developed and that these should incorporate the language structures characteristic of pre-school children.

AIM

The present study was designed to identify structural units of language as they appeared in the speech of pre-school children aged from 2 to 5 years.

METHOD

Electronic equipment was utilised to record extensive samples of the speech of average upper two, upper three and upper four year old Queensland children in a variety of situations. Computer analysis transformed the recorded speech into three separate language concordances. These provided an index of the range and frequency of single words and sequences of words used by children in the three age groups.

CONCLUSIONS

This report presents evidence concerning the development of structural units of language in the speech of pre-school white children in Brisbane. A comparison was made between the structures isolated in this research, and those evident in the speech of four year old Aboriginal children.

The evidence suggests that the development of structural units of standard Australian English manifest by these children is well below that of average white children. Reference is made to some implications for the development of compensatory language programs for Aboriginal children.

Chapter 1

INTRODUCTION

Research undertaken in Queensland during the past decade has shown that the performance of retarded readers can be significantly improved by the application of relatively short, specially devised oral language programs.[1] These programs concentrate on improving oral language and do not contain specific emphasis on reading instruction. Nevertheless, improvement in reading occurs as a by-product.

Oral language programs have been constructed with the aim of remedying oral language weaknesses of various groups of children. These weaknesses were diagnosed after administration of the Illinois Test of Psycholinguistic Abilities (Kirk & McCarthy, 1961).

By 1965, considerable success had been achieved through special language programs devised for a wide range of physically handicapped children, mentally retarded children, and retarded readers in an ordinary school situation. It was regarded as significant that irrespective of the type of handicap which characterised the groups of children involved, the basic weaknesses in language development appeared to be remarkably similar from group to group. In fact the results of the research in Queensland schools are fundamentally in agreement with the findings of other researchers in Australia and America (Bateman 1963, Kass 1966, McLeod 1967). The summary shown in Table 1 illustrates this.

It is clear that, with the exception of the visually handicapped, retarded readers are characterised by poor performance on the I.T.P.A. subtests that depend primarily on auditory language integration rather than visual discrimination.

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1. This has been reported in Bulletin 34 of the Research and Curriculum Branch, Department of Education, Queensland.

TABLE 1

SUMMARY OF FINDINGS OF VARIOUS RESEARCH STUDIES SHOWING PSYCHOLINGUISTIC CHARACTERISTICS OF RETARDED READERS

I.T.P.A. Subtests on which lowest scores were recorded				
Queensland Studies			Kass (USA)	Bateman (USA)
18 Cerebral Palsied Children (1963)	32 Retarded Readers (1965)	16 Deaf Children (1965)	21 Retarded Readers (1962)	59 Visually Handicapped Children (1962)
Auditory vocal association Visual motor association Vocal encoding	Auditory vocal association	Auditory vocal association	Auditory vocal association	
Auditory vocal automatic (integrative level)	Auditory vocal automatic (integrative level) Auditory vocal sequential	Auditory vocal automatic (integrative level) Auditory vocal sequential	3 tests at integrative level	3 tests at integrative level*

* Bateman found that tests at the integrative level correlated significantly with reading achievement.

Experience over the years has shown and test results have confirmed that Aboriginal children in Queensland schools generally experience difficulty in acquiring proficiency in reading during their primary schooling. It is recognised moreover, that the failure of these children is not associated with physical or mental handicap but is inevitably related to the cultural deprivation which characterises this minority group within our community. Accordingly, in 1965 a field investigation was undertaken to discover whether the same general pattern of oral language weaknesses as had been revealed in previous research involving handicapped children existed amongst young Aboriginal children.

In that year, the I.T.P.A. was administered to a small random sample of seven Grade 2 children at the Cherbourg Community school.

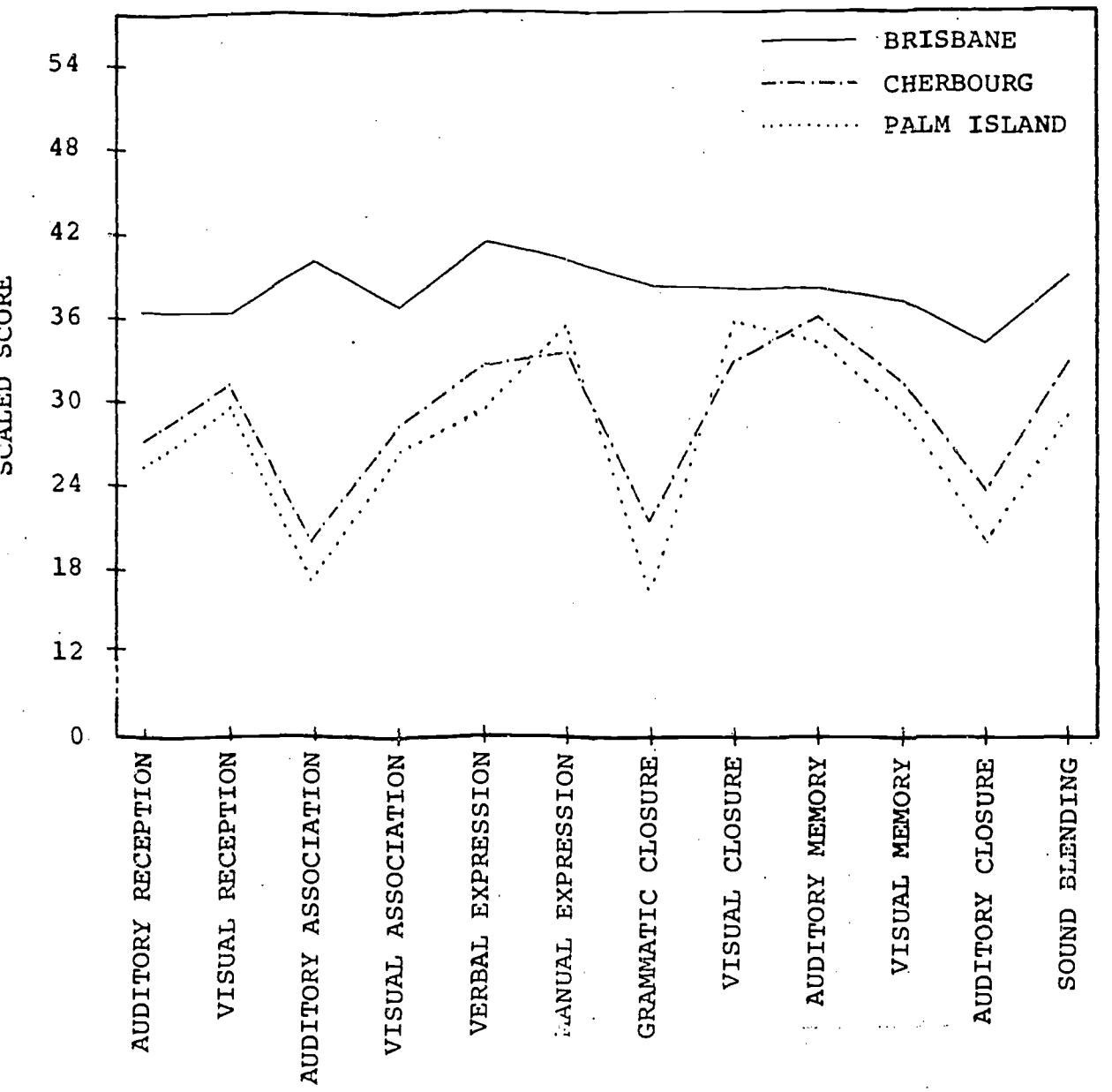
These results were confirmed in 1969 when the Queensland Van Leer Project team tested all Grade 1 children at the Cherbourg and Palm Island Community schools, as well as a sample of five year old Brisbane children. Figure 1 shows the test profiles for the three groups.

Comparison of the mean performance indicated an overall language retardation of approximately 15 months amongst Aboriginal first grade children. It should be stressed that this is a measure of their performance in terms of the requirements of standard Australian English, and in no way reflects ability to communicate with other users of Aboriginal English.

There is a very close similarity between the profile for the small 1965 sample of Aboriginal children and for the larger 1969 groups which included all entrants to school during that year on two Communities. The areas of weakness of the Aboriginal children relative to the Brisbane children are clearly indicated.

FIGURE 1

MEAN I.T.P.A. SCALED SCORES FOR 114 CHILDREN AT PALM ISLAND, CHERBOURG, AND BRISBANE (1969)



I.T.P.A. scaled scores take into account both group means and variances. Mean normative performance in each subject is 36 with a standard deviation of 6.

Aboriginal children exhibit an extreme weakness in the associative tests. Grammatical and structural aspects of standard English, acquired automatically through repeated imitation and association in the majority of Australian homes, are limited. Thus the Aboriginal child by the age of five years has acquired a restricted code of English which, although fulfilling his requirements in his own environment, is not regarded as acceptable in the white community. Moreover, this restricted code is often at variance with the elaborated code which forms the basis of instruction, and the medium of communication in secondary (written) language.

In the light of this evidence, it appears obvious that the first concern in any compensatory educational program for young Aboriginal children involves the expansion of the restricted code of language, which they are accustomed to using, into the elaborated code of standard usage.

Such expansion is not merely a question of extending vocabulary. Equally important is the full development of the structural patterns which convey meaning in a sentence. A restricted idiom like Aboriginal English depends mainly on "content" words to convey information. Pre-school Aboriginal children in the environments under consideration do not often hear "functional" units (auxiliary verbs, plural "s", etc.), because these are rarely used by the vast majority of adults and children around them. As a result, they have not acquired the language habit of listening for the linguistic signals which these units automatically convey to white children of comparable age.

Authors of books for use by older children learning English as a second language, particularly in Africa, have tried to produce a graded language structure as well as graded vocabulary. But there has been less application to books used by children learning to read their first language.

It seems axiomatic that the written form of language in first readers should bear a close relationship to the oral language of children beginning school, both with regard to vocabulary control and control of language structures. This demands detailed knowledge of the way in which children's language develops with regard to structure and vocabulary.

Although there have been numerous studies[1] of the language development of individual children and numerous word counts of the vocabulary of single children, there has been very little work done to determine:

(1) the relative frequency of occurrence of single words in the oral vocabulary of different age groups of children;

and (2) the relative frequency of occurrence, in different age groups, of sequences of words from which developmental language units can be inferred.

The specially compiled language development programs used in Queensland up to the present have included language sequences selected on an intuitive basis. More comprehensive programs for the Aboriginal children require that such selection of language units be on an empirical basis.

It was decided, therefore, that an attempt should be made to isolate the language units characteristic of children during their pre-school years. If this were successful, vocabulary and language structures could be introduced, in both oral language and reading, in the sequence most beneficial to Aboriginal children.

Such a research project would obviously constitute a major undertaking. The commencement of the project in Queensland was made possible as the result of a grant from the Bernard Van Leer Foundation to the Department of Education. This enabled research to be undertaken in connexion with the compilation of compensatory educational programs for Aboriginal children.

The isolation of language structures used by average white children aged approximately 2 years 9 months, 3 years 9 months and 4 years 9 months has now been completed. These structures have been incorporated into oral language and reading programs for use with Aboriginal children.

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1. See, for example: Braine, M.D. (1963). The ontogeny of English phrase structure: the first phrase. *Language 39, 129-151.* Brown, R. & Bellugi, U. (1964). Three processes in the child's acquisition of syntax. In E. H. Lenneberg (ed.) *New directions in the study of language.*

It is considered that there is likely to be widespread interest in the research which has gone into the isolation of the language structures. This aspect of the work of the Van Leer Project is therefore being reported at this stage before the completion of the main part of the Project, the development of compensatory educational programs.

Chapter 2

OUTLINE OF PROCEDURES

The extent of generalisation possible from studies of the longitudinal development of language in individual children[1] is difficult to ascertain. Nevertheless, there is a need to discover what might be common or core elements of language as it develops in children.

It seems logical that the "average" language used by children in their everyday experiences should form the basis for oral, read and written language when children begin formal schooling. However, in order to know what "average" language really is, we require more than word frequency counts. We need to know how words combine.

The function of combinability is one of the fundamental characteristics of any item in a language. The capacity of an item to combine with other items largely determines its frequency and probability of occurrence. Words that occur over and over again are those that combine most readily with other words.

It is for this reason that structure words[2] occur so frequently. Samples of adult language are likely to contain words like "a", "the", and "is" at the head of the list. These words are cues to sentence structure. If the average child is able to use most of the structures used by adults by the time he is four years old, as most linguists maintain, then it is likely that the most frequently used words at this age are also structure words.

It should be possible to make a judgment concerning the order of development of "units of language" and of sentence patterns by studying the relative frequency of the occurrence of structure words in language samples from children aged respectively two years, three years and four years.

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1. See, for example: Braine (1963), *op.cit.* Brown, R. & Fraser, C. (1963). The acquisition of Syntax in verbal behaviour and learning. In C.N. Cofer and B.S. Musgrave (Eds.) *Verbal behaviour and learning problems and processes.* Brown & Bellugi (1964), *op.cit.*

2. Words which have little meaning other than their structural function in a sentence.

Computer word and morpheme concordances[1] have been used to compare dialects and different languages. If samples of two year, three year and four year old children's language could be treated as intact languages, then changes could be noted by comparing concordances for the various age levels.

It was decided to use this technique in the present study to investigate the development of language amongst pre-school children. A description of the concordance is given in Appendix B.

Selection of children for the study

At the outset it was decided that comparison should be made of the language typical of each age group of children. It was important, therefore, to ensure that each group of children selected for study represented an average group of children for that age level. Accordingly, great care was taken with the sampling procedure and a language test was used to screen out children whose language was not "average" for their age group. Details of the sampling procedure are given in Appendix A.

Screening for average language ability

The sample of children was divided initially into six groups according to chronological age. Table 2 shows this grouping.

TABLE 2

INITIAL GROUPING OF SAMPLE ACCORDING TO CHRONOLOGICAL AGE

Age Range/ yrs/mths	Number	Mean Age months	S.D. months
5 +	28	63	2.64
4/6 - 4/11	22	57	1.59
4/0 - 4/5	25	51	1.62
3/6 - 3/11	29	45	1.8
3/0 - 3/5	13	40	1.32
2/6 - 2/11	15	33	1.7

1. A concordance lists each word alphabetically in context.

The initial plan of using all six groups was not practicable because of the volume of language which would have to be processed. Consequently three groups were selected as representing the sequential age groups. These groups comprised upper two year, upper three year, and upper four year old children. (The four year group was extended upwards into the early five year level. This ensured that the "upper four year old" group represented all children about to begin schooling.) Even with three groups, the task of recording and transcribing language became very onerous and time-consuming.

The computer program imposed limits on the amount of recorded language which could be processed (26,000 morphemes or 1,440 lines for each age group). In order to ensure, therefore, that the language analysed in each concordance was representative of the speech of average white children, only those children whose scaled scores on the Illinois Test of Psycholinguistic Abilities were within one standard deviation of the mean of each age group were retained in the sample.

This selection meant a loss of over half of the upper four year and five year old group and almost half the upper three year old group. The final composition of the three groups, together with their mean chronological age, is shown in Table 3.

TABLE 3

MEAN CHRONOLOGICAL AGE OF THE THREE AGE GROUPS

Group	No.	Mean Age in Mths	S.D. in Mths
Upper 4 year old	22	57.32	2.44
Upper 3 year old	18	44.39	1.85
Upper 2 year old	13	32.31	1.84

Mean scaled scores for the three groups are shown in Table 4. As predicted, there was no significant difference in psycholinguistic ability between groups.

TABLE 4

SCALED SCORES ON I.T.P.A. FOR EACH AGE GROUP

Group	No.	Mean Scaled Score	S.D. Scaled Score
Upper 4 year old	22	383.9	27.6
Upper 3 year old	18	386.3	31.8
Upper 2 year old	13	371.4	24.9

The mean language ages of the three groups were two years nine months, three years ten months, and five years respectively.

The recording of language

Approximately two hours of language were recorded from each child. This recording was done using a Geloso Wireless Microphone M21 and a transistorised F.M. Tuner G339. Available, in addition, were two standard microphones.

Children's language was fed into a mixer-preamplifier and finally into a taperecorder. The radio microphone was concealed in a specially made jacket worn by the child whose language was being recorded.

The effect was that the language of the child being recorded was always a little louder than that of those with whom he was interacting. This made the identification of voices easier during transcription.

The radio microphone enabled the child to move where he wanted and uninhibited language sampling was facilitated. Every attempt was made to sample natural interaction with peers, adults, older and younger children.

Most of the recording of the upper two year olds was done in the children's homes. The upper three and upper four year olds were recorded mainly at kindergartens. While each child's language was being recorded, an observer transcribed as much speech as could be taken down by listening through earphones attached to the receiver. Notes were taken of any occurrences which could aid later transcription from the tapes.

The language concordance

Tapes were transcribed as soon as possible after recording, and texts prepared for analysis by computer. The output of the computer was in the form of a language concordance.

The concordance listed each word of the text in alphabetical order and showed the context in which words occurred. Each concordance print-out contained the following five types of information:

(1) The exact text submitted for analysis. At the end of each line of the text was the code number of the text and a line number given to the text as it was printed. Reproduced below is an exact copy of the relevant sections of the first two lines of the text for the upper three year old group.

-------10 YOU-/ D-WOUL LIKE TO GO FOR 201 01

A RIDE IN THAT ONE. 403 NO,--------- 201 02

The first three digits at the end of the line indicate the number of the text and the last two digits, the line of that text as printed. The numbers 10 and 403 identify the speakers.

(2) A frequency table showing the number and percentage of the characters used in the text. Table 5 contains a sample from the upper three year old group.

TABLE 5

FREQUENCY AND FREQUENCY PERCENTAGE OF CHARACTERS USED IN THE THREE YEAR OLD LANGUAGE SAMPLE

Character	Frequency	Frequency %
A	4331	6.17
B	1723	2.45
C	947	1.35
D	1870	2.66
E	7363	10.49

(3) An alphabetical listing of words and morphemes justified towards the right from the middle of each line. Reproduced below are two typical lines from the upper three year old concordance.

-------I KNOW WHAT THIS S3-BE, GRASS-+GW---226 00 60

-------I KNOW WHAT YOU NT-HAVE N-SEE-------234 43 42

The first three words of each line are the same. Alphabetisation therefore is governed by the fourth word in each line. "I" the initial word at the centre of the page of the concordance is found by looking in the forty-second space along line forty-three of text 234. "-+GW" indicates that "grass" was pronounced "gwass".

(4) The utterances of each speaker listed alphabetically under the speaker's code number,e.g.

-------403 I NT-CAN HEAR THAT----------223 16 54

-------403 I NT-DO KNOW HER NAME---------206 27 54

(5) Statistics relevant to the text. Table 6 shows the statistics for the upper three year old group.

TABLE 6

STATISTICS SHOWN IN CONCORDANCE FOR THE

UPPER THREE YEAR OLD GROUP

Number of alpha-numerical characters	70,214
Total number of characters	100,736
Total number of morphemes	23,780
Total number of words	9,337
Total number of lines	1,496
Average number of morphemes per line	15.90
Average number of words per line	12.93

Words and morphemes are listed alphabetically and are right justified, i.e. alphabetisation starts with key morphemes, but each word to the right is also alphabetised. This is illustrated below where the key morpheme "in" is shown and words to its right are given in alphabetical order.

----------IN MY MONEY BOX----------

----------IN MY MONEY BOX----------

----------IN MY T.V.----------

----------IN MY WALLET----------

----------IN NOW----------

----------IN NOW----------

----------IN PARK SOMEWHERE----------

Details of the data preparation are included in Appendix B.

Chapter 3

THE LANGUAGE USAGE OF BRISBANE PRE-SCHOOL CHILDREN

This chapter gives an account of the listing of the single words and sequences of words most frequently used by pre-school children in the Brisbane sample. The data indicates the development of language through the upper two year old, upper three year old and upper four year old age levels.

Single word frequencies

Because of the differences in total verbal output for each age level, the frequencies of words at the upper two year old and upper three year old levels have been weighted to make them readily comparable with the frequencies for the upper four year old level.

Since it was important to account for the proportion of each group actually using a given word, frequencies were further weighted by the ratio of the number of speakers using the word to the total number of possible speakers. The resultant indices of usage at the upper two year, upper three year and upper four year old levels are thus directly comparable.

These indices of usage for the three age groups were then added to give a composite index. It was thus possible to obtain a rank order of the words most frequently used by the combined sample of pre-school children. A complete listing of these words is given in Appendix D.

Table 7 shows the first 24 words from the list.

TABLE 7

THE MOST FREQUENTLY USED WORDS

IN THE LANGUAGE OF BRISBANE PRE-SCHOOL CHILDREN

Word	Upper Two Index	Upper Three Index	Upper Four Index	Composite Index
I	290	450	445	1185
is	357	319	247	923
a	272	296	275	843
that	341	225	253	819
you	172	257	291	720
it	195	252	225	672
look	363	125	97	585
there	389	117	65	571
the	140	172	230	542
he	288	138	66	492
in	204	153	126	483
no	232	125	84	441
yes	229	112	88	429
here	245	117	50	412
got	161	144	96	401
to	137	113	141	391
one	138	116	132	386
on	138	142	92	372
and	39	125	180	344
me	169	73	63	305
this	81	102	110	293
do	23	190	73	286
up	119	111	47	277
go	121	82	67	270

As predicted, there is a high proportion of picture words at the head of the list.

The most frequent word in the language of pre-school children was the personal pronoun "I". It will be noted that there was a rise in the frequency of occurrence of the nominative form of the pronoun as speakers increased in chronological age, and a decline in the relative frequency of "me". Sequences such as "me got him" occurred only at the two year old level (see p. 19).

The use of the conjunction "and" shows a marked increase from two to four years. This reflects the expansion of sentence structure from simple statements to more complex patterns containing additional phrases and clauses.

The frequency of occurrence of clause markers (e.g. "if"), question markers ("how"), and different tenses and moods of verbs at various age levels indicates the developing use of particular sentence structures. Some samples are given in the following table:

TABLE 8

INDEX OF OCCURRENCE OF STRUCTURE WORDS AT DIFFERENT AGE LEVELS

Word	Two Year Level (N = 13)	Three Year Level (N = 18)	Four Year Level (N = 22)
how	2 (7/3)*	4 (10/7)	7 (15/10)
if	-	4 (10/7)	9 (23/9)
might	2 (5/4)	10 (27/7)	15 (26/13)

* (7/3 where 7 = number of occurrences of the word, 3 = number of different speakers who used it).

Language Sequences

Once single-word frequencies had been determined, a list of the most frequently used sequences of words was compiled. Usage indices were calculated by summing occurrence indices of the second word in a sequence across age groups, as had been done with the single word frequencies.

The first word in many sequences is a signalling word or marker of the structure that follows. It was considered that the frequency with which this word occurred as a single word to some extent determined the power of the whole sequence.

To order the sequences, sums (across age groups) of frequency indices for the first word in a sequence (f_a) were multiplied by the sums (across age groups) of indices of the frequency with which the first two words occurred together (f_{a+b}). This composite index ($f_a \times f_{a+b}$) determines the most frequent sequences of words occurring in Brisbane pre-school language are given in Table 9.

TABLE 9

LANGUAGE SEQUENCES MOST FREQUENTLY USED

BY BRISBANE PRE-SCHOOL CHILDREN

Sequence	Composite Index	f_{a+b} Index
I'm going to	1528	128.8
That's a	1117	136.5
I want to	851	71.8
I got	704	59.4
is a	651	70.5
I'll	436	36.8
It's a	425	63.3
He's going to	419	85.2
I don't know	342	28.9
look at	265	44.8

Some sequences which illustrate the increasing sophistication of language structures used at the different age levels are listed below.

TABLE 10

INDEX OF OCCURRENCE OF LANGUAGE SEQUENCES AT DIFFERENT AGE LEVELS

Sequence	Two Year Index	Three Year Index	Four Year Index
I got	13.9	27.8	17.7
I've got	0.5	1.0	2.9
I'll	2.4	14.8	19.6
I'll be	-	0.5	1.3
I had	-	0.5	3.6
I could	-	0.5	15.3
I need	-	-	3.0
I might	-	-	1.1
when I	-	0.8	2.3
me got	4.0	-	-
you know	-	1.6	13.0
in there	19.3	7.2	2.5
in the {box / water}	6.9	14.3	21.0
What is that	-	5.9	13.1
and he	-	1.8	3.5
and then	-	1.0	2.7
this is	1.3	11.4	10.5
look that	6.4	-	-

It will be noted that the frequency of occurrence of the sequence "I got" at the four year level decreases relative to the three year level, while the inclusion of the auxiliary verb "'ve" ("I've got") increases. There is also increasing sophistication in the use of tense and mood - e.g. "I'll", "I had", "I could", "I might".

Generalised positional statements such as "in there" decreased in frequency over the three years, while more specific statements ("in the box", "in the water") increased in relative frequency. A more precise phrasing of questions (e.g. "What is that - ?") is also evident. Wrong use of case with pronouns ("me got") and omission of prepositions ("look that" instead of "look at that") tended to disappear after the two year level.

Expansion of sentence structure by the use of additional clauses is indicated by the increased usage of units such as "when I", "and he", "and then". These units begin to appear at the three year level, and are becoming more frequent in the speech of four year olds.

Chapter 4

POSSIBLE RELEVANCE OF THE STUDY FOR ABORIGINAL EDUCATION

This study has revealed information about the development of language structures amongst average Queensland pre-school children. Such information provides a basis for the compilation of developmental programs, in both primary and secondary language, which follow a sequence that is natural for the child. Because of this, the study is considered to have relevance for language teaching in all elementary grades. Its immediate application, however, will be the development of primary language programs for Aboriginal children in their first year of school in Queensland.

As indicated previously, Aboriginal school starters are, in terms of I.T.P.A. scores, about 15 months retarded in language development. It would appear likely therefore that their range of vocabulary and their mastery of standard Australian English language structures would be comparable to those of upper three and four year old white children. The language structures, therefore, which are characteristic of the speech of upper three year and upper four year old children should be included in any language program devised for use with Grade 1 Aboriginal children.

A further study has in fact been conducted to obtain more precise information about the level of language development of Aboriginal children at the time of their entering school. This study, which was similar in design to the one reported here, involved Aboriginal children who would be beginning school within three months. Comparison of the results of the two studies will determine the extent and underlying pattern of the differences between Aboriginal English and Standard Australian English. Although the analysis of the Aboriginal data is not yet complete, preliminary findings indicate that the situation is very like that predicted.

It was noted, amongst Brisbane pre-schoolers, that the frequency of occurrence of the pronoun "me" decreased with age, while that of "I" increased. The frequency of occurrence of the final "s" to mark plural nouns was quite high among all age groups. The following table compares the occurrence of these items and a few others in the three Brisbane concordances and the Palm Island Aboriginal concordance.

TABLE 11

USAGE INDICES OF SINGLE UNITS IN BRISBANE AND PALM ISLAND CONCORDANCES

Unit	BRISBANE			PALM ISLAND
	Upper 2 yr	Upper 3 yr	Upper 4 yr	Upper 4 yr
I	290	450	445	368
me	169	73	63	94
plural "s"	149*	117	166	9
found	-	-	3.8	0.2
half	-	-	0.6	0.1

* This sample included incorrect usage such as "peoples", "brokens".

It will be noted that Aboriginal usage of "I" and "me" falls between the two and three year old levels. Plural "s" is virtually non-existent in the speech of Palm Island children. On the other hand, there were some occurrences in Palm Island of irregular forms of past tense - e.g. "found" - and fairly sophisticated concepts - e.g. "half" - which occurred only at the four year level in Brisbane.

Table 12 compares the frequency of occurrence of three two-word sequences ("that a", "that's", and "I'm") in the four concordances.

TABLE 12

USAGE INDICES OF THREE TWO-WORD SEQUENCES IN BRISBANE AND PALM ISLAND CONCORDANCES

First Word in Sequence	BRISBANE			PALM IS.
	Upper 2 yr	Upper 3 yr	Upper 4 yr	Upper 4 yr
that	a 3.2	-	-	a 7.2
that	's 41.9	's 49.5	's 45.1	's 4
I	'm 13.5	'm 54	'm 61.3	'm 6

Once again, the grammatical standard of these language structures from Palm Island is more directly comparable with the two year Brisbane sample than with the equivalent Brisbane age group. Omission of the verb "to be", either when standing alone in an equational statement (e.g. "That a big one"), or as an auxiliary (e.g. "I going") is a noticeable characteristic of Aboriginal English.

As well as omitting certain structures (verbs, auxiliaries, plural "s", etc.) which have become standard for white five year olds, Aboriginal children use some constructions which are not used by white children. Examples are given below:

"He bin go bump in you."
"We bin give you alot of shell, eh?"
"He big one, eh?"
"Ufla (we) got tee vee."
"You know ufla (our) dog name?"
"Youfla (you) can have one."
"Oh look at crocodile-la."
"Look here-la. Him find this-la."
"You look mine-la."

When complete, the findings of this linguistic research, together with the results of an extensive program of psycholinguistic testing, will form the basis upon which the Queensland Van Leer Language Development Program will be built. Emphasis is being placed on the discovery of the existing ideas and language patterns of young Aboriginal children. Units introduced in the classroom will move gradually from words and sequences found in both Aboriginal and Standard Australian English to those constructions where Aboriginal English usage does not conform to the standard.

At no time will there be any suggestion that Aboriginal English is not a valid form of communication. It will be emphasised that the new structures are those which normally occur in secondary language - reading and writing. Reading activities will therefore reinforce these units from the beginning of the program.

The present study has indicated the patterns of language development manifested by average Queensland pre-school children. Applying this knowledge, the Van Leer Language Development Program will be designed to offer to young Aborigines a meaningful and realistic transition from the more restricted code of Aboriginal English to the form and expression of the elaborated code of Standard Australian English.

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APPENDIX A

DETAILS OF SAMPLING PROCEDURE

Obtaining the random sample

A random sample was required of children within the age range two years to four years eleven months. The sample was to be drawn from the population of these age groups resident within the Brisbane Statistical Division as defined for the 1966 census.

There were no available records listing children of a given age from which a random sample might be drawn. However, a detailed analysis of population age distribution was contained in the unpublished records of the Bureau of Census and Statistics. The smallest unit in terms of which data were analysed was the collector's district. These areas were delimited by geographical characteristics with allowance made for population density.

Within the Brisbane Statistical Division there were 937 collectors' districts. For the 1966 analysis, children aged 0 - 4 years were grouped together. Used three years later, this information was based on children then aged 3 - 7 years. An assumption was made that no major population re-distribution had occurred in Brisbane during the last three years. This was supported by a study of trends emerging from one census to the next and from inter-census reports.

A further assumption, that the 2 - 4 years population was distributed proportionately to the 3 - 7 years population, was made. A check of monthly bulletins showed no significant difference in birth rates within the major statistical sub-divisions of Brisbane during the year following the 1966 census or during several years preceding it.

It was not possible to allow for population changes within the smallest units - collectors' districts - as no inter-census analysis at this level had been carried out. However there was evidence that in only a few collectors' districts such changes would have taken place. Therefore the 1966 analysis of population by age for Brisbane collectors' districts was accepted as providing satisfactory basis for sampling in this study.

A two-stage sampling procedure was used. Area names were converted from computer code to map labels. Collectors' districts were ranked according to total population in the 0 - 4 years age group. To give each child an equal chance of selection, collectors' districts were then combined so that each of seventy major groups thus formed contained approximately the same number of children.

Variation of size within each group was no greater than two per cent. Each major group contained a number of smaller groups of approximately the same size. Variation of size within these groups was no greater than three per cent of the mean group size. In a few cases where population density was low, a third stage of regrouping of smaller units was necessary to avoid too great a variation.

Major groups were recorded in random order and a series of numbers commencing at 01 was allocated. Using a table of random numbers, it was determined from which major group each child in the study would be drawn. More than the expected number of children required were located in this fashion and the order of drawing was preserved. The same procedure was used to allocate children at second- and, in a few cases, third-level groups. In this way, the collector's district was determined for each child in the study.

Selection of children within collectors' districts was geographical. Points on maps provided by the Bureau of Census and Statistics were selected at random. These were the starting points for locating a child within a collector's district.

The collector proceeded from door to door until the required number of children within the specified age range was located. This ensured that each eligible child within the area had an equal chance of selection.

APPENDIX B

PREPARATION OF TEXTS FOR COMPUTER ANALYSIS

The program provides a complete alphabetic listing of all morphemes occurring in a given text. The text should not contain more than 26,000 morphemes nor more than 1,440 lines. It is possible to increase the number of lines if the average number of morphemes to the line is significantly less than 18, but, in general, the above limits should be observed. If a text contains too many morphemes or too many lines, the computer will ignore the rest of the text once one of the limits has been reached.

A line is defined as containing 80 single characters. All alphabetic, numeric or punctuation characters, including blanks, count. The first 75 are text material, and the remainder are strictly numeric forming a line identification number. Words should be separated by a space and morphemes within a word by hyphens,

e.g. SI-YA MA-KAN

The text material can be prepared in two forms:

1) Continuous Format: The material is written continuously, words and morphemes overflowing directly into the following line if necessary. e.g.

.....L23456

IKE THIS.....23457

N.B. Should one word finish in the 75th character position the first character on the next line must be a space.

One difficulty with this format is that its continuous nature makes it difficult to insert corrections that are of different length from the erroneous text. It is also more difficult to read and to copy.

2) Free Format: The second format allows every line to begin or end with an arbitrary number of blanks. Further, when a word finishes in the 75th position, the next word can start in the first position of the next line. It is allowable to have a word overflowing from one line to the next, but only at a morpheme break, i.e. a hyphen must be the last non-space character in the line if there is an overflow.

Examples of acceptable text under this format are:

a) START.....STOP 02001

b) END03158

BEGIN.....03159

c) .....MORPH- 23467

EME.....23468

The line identification number must consist of at least one digit and be right justified. The maximum permissible number is 32766.

On the assumption that the complete input will contain several distinct texts, it is suggested that a method of line identification could be to use the first two digits to identify the text and the final three to identify the line within that text, or three digits for the text and two for the line. This composite number should thus increase by one for every line within a text, then jump at the start of a new group. e.g. say the 7th group contained 53 lines then line identification numbers could be

00753 07503

or

00801 08001

(non-significant zeros may be omitted).

This jump in line identification is of some importance as in the listing of each morpheme a context of 110 characters (includes morpheme) is given, centred on the morpheme. When this context is being filled out backwards in the text it might become necessary to take the text from the previous line to complete the context. First a check is made using the line number to ensure that the text is continuous. If it is, then the context is completed with material from the previous line; otherwise, spaces are inserted. Similarly for the generation of context forward of the morpheme, material would only be taken from the next line if the line number indicated that the lines were contiguous.

In addition to the text laid out as indicated above, a title of up to 80 characters is required. This should identify the user and give any other information considered useful to identify the text.

Characters available for use

In addition to the alphabetic characters A to Z, the numeric symbols Ø to 9 and the blanks, any eleven of the following twelve special characters may be used:

- . , ( ) ' * / $ + &

All other characters will be replaced by blanks. (N.B. Upper case letters only are available, and these will be used irrespective of the case in which alphabetic material is submitted.) The use of the hyphen is restricted to the indication of a morpheme break and will always be interpreted as such.

Output will be given in two parts:

1) A listing of the original text with a character, morpheme, word and line count.

2) A complete alphabetic listing of every morpheme in context, the number of times it occurred and its percentage frequency.

This morpheme listing can group together morphemes in order of similarity of (1) following context, (2) preceding context, or (3) a mixture of the two. e.g. for input text

ABC-DEF GH-IJ LMN. OPQ

The order for the morpheme GH could be sorted

(1) according to the letters which follow, namely -IJ LMN. OPQ etc.

(2) according to the letters which follow up to the end of the word (-IJ) and then according to the letters which precede GH, namely FED-CBA.

(3) according to the letters which follow up to the next period (or other specified symbol) and then according to the letters which precede GH

The above alternatives apply only to the method of ordering the different occurrences of a morpheme. The context of each morpheme will be printed out in natural order, with the morpheme in the middle of the line. If only a word concordance is required, morpheme markers should be omitted.

Agreement

A common phenomenon in many languages is that of grammatical "agreement" between non-contiguous items in a sentence, and of discontinuous morphemes. Both these phenomena are found in mature English. A convenient method of handling these for analysis is to change the order of the morphemes to bring agreeing items together as far as possible, and to bring discontinuous morphemes together. Examples of agreement are:

He goes to town. *cf* *They go to town*

I saw the man who chopped the tree. *cf* *I saw the tree which the man chopped.*

Examples of discontinuous morphemes are:

I am going. (be..ing signals continous aspect, *cf I go*)

Put back.

Pick the thing *up*.

He *was* slowly com*ing*.

When a concordance is produced by the computer, it would be of maximum benefit if related items are together in the input. For example consider the following: *Pick it up; Pick the toy up; He picks all the things up; Did you pick it up? I picked it up; They were picking them up; He was picked up.* If it is conceded that *pick* and *up* belong together as one idea, it is convenient to so order the computer input that *pick up* occurs together, if this can be done in such a way that clearly distinguishes such utterances as, say, *pick it up* and *pick up it*, and that also can show tense inflections of the verb clearly. This can be done by means of the following devices:

1. Reposition verb inflections before the verb stem they occur on, using hyphen.

2. Move the preposition to the position immediately following the verb and suffix it to show it has been moved and to show its original position. (Transposition of the preposition will not be done if it modifies a noun phrase, as for example in *Put it in the bin*).

Examples:

Pick it up	pick up-/ it x.
Pick the toy up	pick up-/ the toy x.
He picks all the things up	he s-pick up-/3 all the things x.
Did you pick it up?	you-/ d-di pick up-/ it x.
I picked it up.	i d-pick up-/ it x.
They were picking them up.	they re-wa ing-pick up-/ them x.
He was picked up.	he s-wa d-pick up.

(In transposition of prepositions like these, *x* is inserted in the original position of the preposition to facilitate finding this position. See also the section on Questions and Adverbs.)

Some children use a form *he going* for *he is* (or *he's*) *going*.

he going	he ing-go.
he is going.	he s-be ing-go.
he's going.	he-s3-be2 ing-go.

Analysis would show that what the adult used *be...ing* to signal, the child uses *ing* alone to signal. Transposition of the verb and suffix does not alter or obscure this analysis for the immature speech, though it can make the analysis clearer for the adult speech.

Suffixes in English

English has several meanings signalled by *-s* suffixes (or *-es*): plural, possessive, *is*, *has*; and on verbs third person singular, sometimes *us*. Also the suffix *-d* may be past tense in a verb, or an abbreviation for *would* or *had* added to nouns and pronouns. Because these meanings are so diverse it will be an advantage to mark these suffixes differently. The analyst may be wrong to mark these differently. Such analysis may be wrong for younger children, though evidence to date from recorded conversations among children indicates that where these suffixes occur they are used similarly to the mature usage.

The computer concordance will show whether the analysis has been in error or not, and more quickly so if the different usages are distinguished. The suffix *-s* is very common; it can be expected that there will be pages and pages of examples in the concordance. Sorting these different meanings if they were not differently marked would be a tremendous chore. By marking them differently the computer does most of the work and the analyst needs only check the output for exceptions.

Certain *s's* and certain *-d* suffixes are reduced from *is, has* and *had, would* respectively. At the risk of over-analysis, a mature speaker's judgment will be made as to whether *be, have* or *would* underlies the abbreviation. However these postulated *be's, have's, had's* and *would's* will be marked differently from examples where these forms are unabbreviated as in words *are, have, would,* so that the concordance will show which forms are overt and which are covert.

Irregular forms

Some general conventions on marking morphemes can now be set up. However some verb forms and noun plurals are irregular. Young children do not at first master all irregularities; as they become aware of the regular formations their attempts at word construction may contain "errors", e.g. *foots* for *feet*. It will be necessary for such irregular forms to indicate in some way whether the speaker has used the correct mature form, or a regularised form. E.g. while *talked* is transcribed *d-talk, took* is transcribed *took* not *d-take*. *d-take* would indicate the speaker has said *taked*. *Foots* is transcribed *foots-sp; feet* as *feet*.

"Incorrect" pronounciation by speakers

The computer transcription of utterances will be generally in normal English spelling. However the transcription can show some features of pronounciation of words. If a speaker abbreviates some words, apostrophes can mark omitted sounds, e.g.

'nana	'banana'
'cause	'because'
roun'	'round'
'em	'them'
'im	'him'
'e	'he'

etc.

However if the omitted sound or sounds is an inflection, an apostrophe should not be written in, e.g. *cat* for 'cats', *open* for 'opened, *wen* for 'went'.

If a speaker substitutes other sounds or words for the usual ones, an attempt can be made to represent these, e.g.

de	'the'	*moder*	'mother'
nup	'no, nope'	*ufela*	'us, we'
dey	'they'	*a'*	'of'
cin	'can'	*n'can*	'can't'
twee	'tree'		

If a child indulges in vocal play a more phonetic transcription can be used. This type of sound substitution is a phonetic difference for all *ow* or long *ere* sounds, and not a phonemic difference.

Apostrophes will not be used in many places where they are normally used in English, e.g.

I'm	*i-m-be2*
can't	*nt-can*
I'll	*i-ll-wi2*
the cat's meat	*the cat-ss meat*

When abbreviated or altered forms of words or morphemes become identical in form with other morphemes, the apostrophe can be used to mark the altered form, even when the above notes may not suggest it, e.g. in the use of -in for *ing:*

'an' 'n'	'and'
in'-cook	'cooking'
'cause	'because'
a'	'of'
n'can	'can't'

Questions and Adverbs:

Whenever adverbs, or transposed subjects in questions separate parts of the verb, these should be transposed to bring all the verb parts together so that these occur together in the concordance, e.g.

will you go?	*you-/ will go*
will all these people come?	*all these people 3-/ will come*
he was slowly going up the hill.	*he s3-wa ing-go /-slowly up the hill.*

It is better to shift the adverb back so that *x* and *s3* are adjacent, rather than forward to separate subject and its agreeing verb affix. For rules on how to mark transpositions, see below under Transposition of Words.

For question and verbal adverb transpositions *x* is not inserted in the original position of the subject (see above under compound verbs), as this would upset the concordance alphabetising.

When a question is indicated by intonation only, with no interrogative words or change of word order, a *q* is placed as last word of the sentence, e.g.

he went to town?	*he d-wen to town q.*

Verbal Agreement with Subject

Where a verb agrees with a third person singular subject (e.g. *he runs*), or with number of subject (e.g. *I was, we were*), the verbal agreement suffix should be placed adjacent to the subject. Where such a suffix on a verb is transposed to the front of the verb, and the other transpositions outlined above are carried out, this conjunction usually occurs automatically, e.g.

is he running?	*he-/ s3-be ing-run.*
he today is collecting it from town.	*today-/ he s3-be ing-collect it from town.*

If a verb has past tense or other suffix with something agreeing with the subject, the latter should be placed first so that it is adjacent to the subject. This occurs only with the past tense of Where a negative occurs also it should follow the subject agreement, and precede past tense. The order in the verb for the concordance is:

1. person suffix,
2. negative,
3. (tense suffix, aux. verb)^{n},
4. suffix,
5. verb (n = 0, 1, 2 times).

They were going.	*they re-wa ing-go.*
Isn't he coming?	*he-/ s3-nt-be ing-come.*
He's not coming.	*he-s3 not-be2 ing-come.*
Didn't he go?	*he-/ nt-d-di go.*

(The one exception to hyphenating separate words together that the hyphen may signify *not* is transposed.)

Transposition of Words

If one word (other than *not* in verbs) is transposed, a dash or dashes, or dash and number, are placed (with hyphen) on the side of the word closest to the original placing of the word, i.e. on the left if the word was shifted back, on the right if the word was shifted forward. For example:

put it down.	*put down /-it.*
will you go.	*you-/ will go.*

/ indicates the item is transposed over one word, // indicates the word is transposed over two words, /3, /4, etc. indicates the item is transposed over three, four, etc. words. E.g.

'I might hammer all the nails in.'	*i d-migh hammer in-/3 all the nail-sp x.*

If a group of words is transposed, the symbol for number of transpositions is followed by hyphen and the number of words shifted if the words are shifted forward, or preceded by hyphen and the number of words shifted if the words are shifted back. Examples:

Will the older children go?	*the older children 3-/ will go*
It's a big one, isn't it!	*it-s3-be2 nt-be-s3 it 2-/3 a big one, x.*

Marking which interposes extra symbols between parts of a verb, or verb and subject agreement, should be avoided. For example, 'It was nearly finished' write as *it sg-wa d-finish /- nearly,* and not *it nearly-/ sg-wa d-finish it sg-wa d-finish-/ nearly.*

The symbol *x* (see examples above) is placed to mark the original position of a shifted phrase, except when the word or phrase shifted is shifted out of a verb phrase. If possible, and if not violating other requirements, put hyphen and dash on the word or phrase which was originally in the position marked by *x*. This simplifies reconstructing the original form if there is a considerable shift.

Question phrases such as *isn't it, wasn't it, shall we,* etc. should be shifted to be adjacent to the verb they belong with, and their original position should be marked by *x*. In some cases the name of a person addressed is also shifted. See following examples and comment:

he went to town, didn't he?	*he d-wen nt-d-di he 2-// to town, x.*
let's go across the river shall we?	*s-let go shall we 2-/3 across the river, x.*
it's a big one, isn't it!	*it-s3-be2 nt-be-s3 it 2-/3 a big one x.*
I'm not going, are I?	*i-m not-be2 ing-go be-re re-be i.*
he didn't get it, did you Michael?	*he nt-d-di get d-di you Michael 3-/ it x.*

If a change of person occurs as in this last example, where a statement is made in third person and a corroborative question asked of the person in second person with name added, the person's name should be transposed also.

Classification of Suffixes

The following list shows the conventions to be used, where noun = noun, pronoun, adjective, etc., and verb = verb or auxiliary verb.

Form	Class	Analysis
nouns	plural	*noun-sp*
noun's	possessive	*noun-ss*
nouns's	plural possessive	*noun-sp-ss*
verbs	3rd person singular	*verb-s3 (in clause final inverted question phrases) S-3 verb (elsewhere)*
let's (let us)	1st person plural	*let-s*
noun's	is	*noun-s3-be2*
noun's	has	*noun-s3-ha2*
noun'd	had	*noun-s3-ha2*
noun'd	would	*noun-d-wo2*
how'd	did	*how-d-di2*
noun're	are	*noun-re-be2*
noun've	have	*noun-ve-ha2*
noun'm	am	*noun-m-be2*
noun'll	will	*noun-ll-wi2*
noun'na	want to	*noun-na*

With verbs, etc. suffixes are usually to be placed before the verb, except in question phrases as noted. Suffixes *-ed, -t, -d* are written as *d*; suffixes *-en, -ne, -n,* are written as *n*. If forms are irregular, only separate *d* or *n* if they are recognisably present, but not otherwise. A form like *hit* (past or present) is therefore written *hit, took* is written *took, made* is written *made.*

did	*d-di (because past of do)*
would	*d-woul (past of will)*
got	*got*
went	*d-wen*
might	*d-migh (past of may)*

When a verb form also includes *not* or *n't*, this is written before the verb (auxiliary verb) stem, before a tense suffix, but after a person agreement suffix. E.g.

'it isn't'	*it-s3-nt-be*
'it's not'	*it-s3 not-be2*

When an inverted phrase *isn't it, wasn't he, did he,* etc. occurs after a clause to mark a question, the person agreement suffix is placed *after* the verb stem to leave it adjacent to the subject pronoun.

Regular verb forms

wants	*s3-want*
wanted	*d'want*
wantin'	*in'-want*
wanting	*ing-want*
taken	*n-take*

Irregular verb forms

am	*m-be*
is	*s3-be*
are	*re-be*
was	*sg-wa (sg short for singular because it is used for I was, he was)*
were	*re-wa*
been	*m-be*
bin	*n-be or bin*
have	*have*
has	*s3-ha*
had	*d-ha*
should	*d-shoul (shall)*
would	*d-woul (will)*
won't	*nt-wo*
might	*d-migh (may)*
gone	*n-go*

gonna	*go-nna (substitute for in-gc to)*
wen'	*wen*
went	*d-wen*
does	*s3-do*
dos	*s3-doo (preserves vowel)*
did	*d-di*
done	*n-do (There is a vowel change here but errors are uncommon so use spelling do, cf also gone)*
dunno	*dunno or n-do-know*
caught	*d-caugh*
risen	*n-ris (preserves vowel)*
cin (can)	*cin (cf negatives below)*
said	*d-sai*
sayed	*d-say*
says (sez)	*s3-sai* N.B. *regular form spelt differently*
says (to rhyme with raise)	*s3-say*
told	*d-tol*
tol'	*tol*
left	*d-lef (from leave)*
broken	*n-broke*

etc.

"Errors" in verb forms

hitted	*d-hit*
rise-en (wrong vowel)	*n-rise*

Do not move final d on the words like *found* (from *find* or *around* (not a verb).

Contractions

Contraction	Full Form	Written
in't	isn't	*i3-nt-be*
didn't	didn't	*nt-di*
gonna	going to	*go-nna*
gona (long o)	going to	*go-na*
dunno	don't know	*dunno* or *n'da'know*
d'you	do you	*you-/ d'*
dja	did you	*ya-/ d*

etc.

Irregular plurals of nouns

feet	*feet*
foots	*s3-foot*
children	*child-ren*
oxen	*ox-en (to avoid confusion with n, a verb suffix)*
"diminutives" ending	*-y, -ie, unite under -ie*
duckie	*duck-ie*
puppy	*pup-ie*
mummy	*mum-ie*
dolly	*doll-ie*

(But not *bun-ie* for bunny or *loll-ie* for lolly. Bunny does not derive from bun, nor lolly from loll.)

Let Phrases

Place "subject" before *let* if *let* has no subject itself.

let me go	*me-/ let go*
i let him go	*i let go/-him* or *i let him go* but not *i him-/ let go*

Negatives in verb phrases

Place negative before first verb word used, but after any person agreement suffix, unless the latter remains word final.

I can't	*I nt-can*
I didn't go	*I nt-d-di go*
I did not see it	*I not-d-di see it*
I didn'	*I n'-d-di*
in't (isn't it)	*nt-be-i3 it*
it's not working	*it-s3 not-be2 ing-work*
I carn' (can't)	*I n'can*
I am not	*I m-not-be*

Grammatical "Omissions"

It is not uncommon in our data to find children omitting third person singular suffixes, or the auxiliary *be* (*is*, *are*, etc.) in continuous aspects. In order to obtain a direct comparison from the data of the number of times such a form is omitted "incorrectly" with the number of times these items are present, a further device is introduced to mark *absence* of these. We will use the first letter of the omitted form with the number 2 following it.

Examples:

it going now	*it-s2-b2 ing-go now*
he run	*he s2-run*

These will not be added if a whole subject is omitted also, e.g.

going away now	*ing-go away now*

If required, omitted past tense marker may be written *d2*, omitted *have* form *h2*, omitted *am m2*,etc. However omitted *have* in the expression *I got* (for *I have got)* is not to be marked. It is possible that the speaker meant a past tense and not the perfect, so it would not be easy to insert *have* consistently here.

Uncertain Transcriptions and Repetitions

Where a word or stem is uncertain, but a reasonable guess is made, the letter *q* is added as last letter to the word or stem. The same is done to the speaker's identification number if speaker is uncertain. Where a word or phrase is uncertain the word *query* may substitute for it. If enough is heard to know the part of speech of an uncertain word, the part, with *g* added as first letter of the word, may be named, e.g. *gnoun, gname,* etc.

Where a word or phrase is repeated the word *repeat* may be used, *repeat2* for two repetitions, *repeat3* for three repetitions, and so forth.

If a chorus speaks the same item a suitable speaker number is used with *all* written together with the number as one word.

Examples:

what are you doing	*what you-re-be ing-doq.*
MK? he is ~~~ ing	*26q he s3-be ing-query*
oh dear, oh dear,	*oh dear, repeat,*
oh oh oh oh oh	*oh repeat 4.*
chor. me too	*(19) all me too*
hey~~~~~~~~ what (proper noun)	*hey qname what.*

APPENDIX C

Sample Page From Upper Three-Year Old Concordance Print-Out

- 403. ANOTHER PILE NEAR IT. PAUL	LOOK AT ALL THIS. 403 OOH, OOH. I-M-BE2 GO-NNA GET MFQ R	20665	61
QUERY TWO ING-RACE CAR-SP $. 419	LOOK AT AN, LOOK AT THIS, A MAN. 10 MM. MM. 419 SEE. 10	23415	45
—. 431 WELL NT-DO TOUCH IT. 440	LOOK AT EVERY-BODY-SS LUNCH UP THERE, 440 THERE-S3-BE2 L	22867	41
419 A FIRE-ENGINE MAN. $ 419 AW.	LOOK AT HIM NOW. 10 WHAT HE-/ S3-BE2 ING-DO. 419 NT-DOK	23454	51
MAN. BRRRR. 419 HEY. LOOK AT IT,	LOOK AT HIS HIS, 419 IN'-GO GET SOME DIRT WHEN HE S3-GO	23483	60
BE2 GOQ. 10 HE-S3-BE2 ING-HAVE A	LOOK AT HIS TOOTH. $ 462 QUERY ON HIS-+HI TOOTH. 10 WHAT	23130	40
-JOHN-IE STOP IT. QUERY HEY. 408	LOOK AT I GOT ON, THIS S3-NT-BE OURS. 408 I-VE-HA2 GOT A	20806	33
411 NO I NOT DIRT-+D337-Y. $ 419	LOOK AT I-M-BE2 ING-PAINT. $ 430 WE HAVE GOT ALL THE DOU	23313	54
-IT. 10 YOU CAN WALK THROUGH AND	LOOK AT IT. $ 440 OH, HEY. LOOK AT WE-VE-HA2 GOT-+G57. 4	22224	37
——. 415 YOU NT-DO STEP IN HERE.	LOOK AT IT. 408 NOW YOU NAUGHTY BOY, YOU RE-BE. 415 NO H	22150	66
-IT FELL DOWN. FALL. MY TWOQ 425	LOOK AT MY TWO-SPQ. MY TWO. LEAVE THEM 425. HA REPEAT2 L	20536	41
440 LOOK, JUMP, REPEAT2. LOOK.	LOOK AT QUERY 440. HERE-S3-BE2 YOUR, HERE-S3-BE2 YOUR OU	21319	28
YOU BITE. 414 HE NT-WO BITE ME.	LOOK AT QUERY. 430 THERE-S3-BE2 A TURTLE. 430 TURTLE, TU	22040	23
TO DO NOW, HEY. 440 AH. WANT TO	LOOK AT SOME MORE BOOK-SP. 10 SOME MORE BOOK-SP. YOU-/ D	21348	27
——+2NQUERY ON. 10 YES, AH. 462	LOOK AT THAT SLIP-+SLI DOWN THERE! 10 MM, ING-SLIP. 462	23134	50
—RE-BE2 CHILDREN AH. $ 419 HEY,	LOOK AT THAT. LOOK AT THOSE TWO. 10 MM, BOY. 419 LOOK AT	23452	1
M-BE2 ING-MAKE. 10 MM. 419 WELL	LOOK AT THAT. 10 MM. $ 419 LOOK AT THAT, SEE. 10 MM. THA	22338	57
———AT, FOR, FOR A QUERY. 464Q.	LOOK AT THAT. 417 A DIFFERENT. 419 SEE. 10 MM. 464Q NO T	22344	36
WELL LOOK AT THAT. 10 MM. $ 419	LOOK AT THAT, SEE. 10 MM. THAT-S3-BE2 FUNNY ANTHONY. 419	22339	14
- 406 NT-DO TOUCH-+TACHS IT. 406	LOOK AT THAT, THING ING-FLAT. 409 OAWA. 407 A TURTLE. 40	22423	49
——. 403 AH, THE ALL CAT-SP FELL	LOOK AT THE CAT ALL 403. THE CAT FELL NOW. HE D-PACK UP-	20630	42
- ONE NT-BE-S3 IT. 462 YES. 4062	LOOK AT THE LITTLE BOY. WHAT HE-/ S3-BE2 ING-DO. 462 JUS	23177	48
- 409 AND-+2N JE-+* QUERY-S. 407	LOOK AT THE, THE THING-SP, THE BONE. BONE 407. THAT-S3-B	22508	39
10 SOME MORE BOOK-SP. YOU-/ D-DI	LOOK AT THIS ONE. 440 YES. 10 WHICH S3-BE THE BEST PICTU	21349	21
MY MICROPHONE, LOOK. $ 419 HEY,	LOOK AT THIS ONE, REPEAT2. $ 411 QUERY SHOVEL THAT IN. 1	23419	33
—— MAKE IT CLEAN. 415 WE RE-BE	LOOK AT THIS SIDE. 408 YES. NO I D-PAINT HERE. I D-PAINT	22118	40
403	LOOK AT THIS TINY LI'L BOAT-IE. 10 YOU-/ D-WOUL LIKE TO	20101	5

APPENDIX D

FREQUENCY OF OCCURRENCE OF SINGLE WORDS IN THE SPEECH OF UPPER TWO YEAR OLD, UPPER THREE YEAR OLD AND UPPER FOUR YEAR OLD BRISBANE CHILDREN

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
I	314	12	290	450	18	450	490	20	445	1185
is	357	13	357	338	17	319	272	20	247	923
a	272	13	272	314	17	296	275	22	275	843
that	369	12	341	238	17	225	253	22	253	819
you	172	13	172	257	18	257	320	20	291	720
's	290	12	268	238	17	225	206	21	197	690
it	211	12	195	266	17	252	236	21	225	672
-ing	216	12	199	216	18	216	173	22	173	588
look	363	13	363	125	18	125	97	22	97	585
there	389	13	389	117	18	117	84	17	65	571
the	152	12	140	222	14	172	253	20	230	542
he	312	12	288	226	11	138	86	17	66	492
in	204	13	204	153	18	153	126	22	126	483
'nt	139	12	128	215	18	215	144	20	131	474
no	232	13	232	125	18	125	97	19	84	441
yes	229	13	229	126	16	112	102	19	88	429
here	245	13	245	117	18	117	58	19	50	412
got	161	13	161	153	17	144	111	19	96	401
to	148	12	137	120	17	113	155	20	141	391
one	138	13	138	123	17	116	161	18	132	386
on	138	13	138	150	17	142	101	20	92	372
and	57	9	39	150	15	125	198	20	180	344

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
me	183	12	169	88	15	73	73	19	63	305
-d	64	6	30	106	17	101	190	20	173	304
this	96	11	81	123	15	102	127	19	110	293
do	43	7	23	190	18	190	89	18	73	286
up	119	13	119	125	16	111	65	16	47	277
go	131	12	121	92	16	82	87	17	67	270
have) 've)	103	12	95	79	15	66	120	19	104	265
what	82	13	82	75	15	66	133	18	109	257
are) 're)	73	12	67	113	17	107	67	19	58	232
can	66	9	46	95	18	95	89	21	85	226
want	128	13	128	71	16	63	57	14	35	226
we	27	7	14	125	18	125	94	20	86	225
my	123	11	104	67	17	63	73	16	53	220
going	97	8	60	80	16	71	75	18	61	192
see	115	12	106	65	12	44	48	17	37	187
come	87	11	74	88	16	78	45	15	31	183
don't	66	11	56	83	15	69	56	17	43	168
get	114	8	70	74	14	58	49	16	36	164
put	113	9	77	71	14	55	44	15	30	162
mummy	169	11	143	8	3	1	19	7	6	150
him	126	10	97	52	11	31	19	7	6	134
not	43	9	30	68	17	64	43	18	35	129
out	109	8	67	51	12	34	31	14	20	121

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
will) 'll)	20	7	11	68	17	64	63	15	43	118
oh	46	12	43	50	11	31	58	13	34	108
now	39	11	33	52	12	34	50	16	36	103
they	43	11	36	52	11	32	55	13	33	101
down	46	12	43	48	16	43	29	11	15	101
all	37	6	17	52	13	38	55	17	43	98
know	13	6	6	45	11	27	80	18	65	98
-y	68	9	47	28	8	12	54	16	39	98
of	32	9	22	39	11	24	57	17	44	90
like	29	10	22	47	14	37	41	14	26	85
take	61	9	43	25	9	12	38	17	29	84
for	19	7	10	61	14	48	39	14	25	83
big	71	7	38	41	12	27	35	11	18	83
too	50	12	46	30	11	19	29	12	16	81
make	65	7	35	24	11	14	41	14	26	75
little	28	9	19	43	13	31	38	13	22	72
thing (s)	32	7	17	37	15	31	30	17	23	71
where	43	9	30	30	12	20	30	15	21	71
some	14	6	6	54	16	48	22	14	14	68
two	51	8	31	39	12	25	26	10	12	68
has	44	10	34	15	10	8	29	12	16	58
-n	44	10	34	26	11	16	15	11	8	58
with	10	4	3	24	11	15	46	18	38	56
the	28	8	17	29	8	13	40	12	22	52

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
back	39	9	27	33	11	20	15	7	5	52
hey	-	-	-	28	11	17	44	17	34	51
them	22	5	8	26	12	17	36	15	25	50
off	34	6	16	23	11	14	30	14	19	49
ooh	20	7	11	50	11	31	18	7	65	47
be	28	9	19	27	9	13	26	13	15	47
can't	26	10	20	28	13	20	-	-	-	40
car(s)	44	7	24	30	9	15	-	-	-	39
your(s)	23	4	7	42	12	28	12	8	4	39
boy(s)	24	7	13	28	10	15	26	8	10	38
house	44	7	24	10	7	4	21	7	7	35
's(has)	27	9	19	13	9	7	20	10	9	35
dog(s)	35	11	30	15	5	4	-	-	-	34
when	4	4	1	25	13	18	25	11	13	32
over	16	7	8	28	9	14	23	8	8	30
man	31	7	17	9	5	3	22	10	10	30
his	14	6	7	37	10	21	5	3	.7	29
those	8	4	2	11	7	5	24	19	21	28
but	5	2	.8	15	8	7	37	12	20	28
might	5	4	2	27	7	10	26	13	15	27
way	21	7	11	11	6	4	24	11	12	27
let's	14	7	8	27	11	16	10	6	3	27
because	-	-	-	28	8	13	20	12	14	27
did	16	7	9	12	7	5	22	11	11	25
daddy	35	7	19	13	6	4	10	4	2	25

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
hello	23	9	16	10	6	3	14	9	6	25
bird(s)	48	6	22	9	3	2	-	-	-	24
talk	27	6	12	12	3	2	20	10	9	23
more	29	5	11	20	8	9	9	5	2	22
will	6	4	2	26	9	13	17	9	7	22
cat(s)	14	7	8	41	6	14	-	-	-	22
right	21	5	8	10	6	3	22	10	10	21
just	-	-	-	17	7	7	21	15	14	21
another	20	6	9	19	9	10	9	6	2	21
she	14	4	4	12	3	2	27	11	14	20
watch	21	7	11	12	8	5	14	4	3	19
goes	5	3	1	22	10	12	21	6	6	19
was	-	-	-	17	9	9	22	9	9	18
so	-	-	-	10	7	4	24	12	13	17
water	21	7	11	12	6	4	8	6	2	17
then	-	-	-	11	6	4	33	9	13	17
play	11	5	4	13	8	6	15	10	7	17
only	9	3	2	19	10	11	11	7	4	17
well	-	-	-	20	9	10	15	9	6	16
've	4	3	.9	11	7	4	22	11	11	16
again	20	4	6	15	10	8	11	4	2	16
bed(s)	26	5	10	19	4	4	4	4	.7	15
good	15	7	8	12	10	7	-	-	-	15
[illegible]	23	6	11	11	7	4	-	-	-	15
[illegible]	24	6	11	15	5	4	-	-	-	15

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
gone	24	8	15	-	-	-	-	-	-	15
home	9	4	3	20	8	9	9	6	3	15
think	-	-	-	23	5	7	17	10	8	15
other	15	5	6	7	7	3	14	9	6	15
could	-	-	-	4	3	.7	25	12	14	15
truck	21	4	6	19	6	6	5	3	.7	13
baby(s)	20	6	9	11	7	4	-	-	-	13
had	-	-	-	8	6	3	22	10	10	13
if	-	-	-	10	7	4	23	9	9	13
paint	-	-	-	37	5	10	12	5	3	13
would	-	-	-	8	6	3	21	10	10	13
how	7	3	2	10	7	4	15	10	7	13
saw	-	-	-	13	8	5	17	9	7	12
show	15	4	5	13	7	5	9	5	2	12
why	7	4	2	15	10	8	8	5	2	12
walk	19	6	9	9	6	2	6	2	5	12
tea	13	7	7	14	6	5	-	-	-	12
under	20	3	5	16	8	7	-	-	-	12
who	12	3	3	11	6	4	13	8	5	12
give(s)	8	6	4	15	5	4	11	7	4	12
nice	42	3	10	5	4	1	4	3	1	12
box	20	6	9	-	-	-	9	6	2	11
leave	10	3	2	6	4	1	19	9	8	11
haven't	-	-	-	15	10	8	11	5	3	11
away	7	4	2	12	9	6	9	6	3	11

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
head(s)	5	3	1	21	8	9	6	3	.8	11
tortoise	35	4	11	-	-	-	-	-	-	11
bit	5	4	2	12	10	7	13	4	2	11
horse(s)	20	6	9	8	3	1	4	2	.4	10
her	7	4	2	10	7	4	12	8	4	10
frog(s)	26	5	10	-	-	-	-	-	-	10
book	16	5	6	10	6	4	-	-	-	10
run	8	4	3	10	7	4	14	4	3	10
table	15	5	6	9	5	3	5	4	.9	10
eat	12	6	5	12	6	4	-	-	-	9
pussy	14	5	5	9	5	3	11	2	1	9
say	12	6	6	4	4	.9	9	6	2	9
broken	19	6	9	-	-	-	-	-	-	9
miss	-	-	-	16	3	2	19	8	7	9
sit	12	5	5	9	7	4	-	-	-	9
around	-	-	-	17	8	7	6	4	1	8
stop	6	3	1	7	7	3	16	6	4	8
isn't	15	2	2	13	6	3	6	2	.6	7
after	-	-	-	5	4	1	15	10	7	8
won't	13	6	6	4	4	.9	5	3	.7	8
puppy(s)	15	5	6	9	3	2	-	-	-	8
turn(s)	9	3	2	10	6	3	9	5	2	7
doing	13	6	6	5	4	1	-	-	-	7
e	23	4	7	-	-	-	-	-	-	7
	14	5	5	-	-	-	8	4	2	7

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
door	17	5	7	4	1	.2	-	-	-	7
some-thing	5	3	1	-	-	-	12	10	6	7
-ly	-	-	-	8	6	3	12	7	4	7
our(s)	-	-	-	16	4	4	8	7	3	7
three	-	-	-	10	7	4	9	5	2	6
touch	14	4	4	8	5	2	-	-	-	6
kindy	-	-	-	10	7	4	9	6	2	6
time	5	3	1	-	-	-	16	7	5	6
better	7	2	1	8	6	3	9	6	2	6
you're	-	-	-	-	-	-	15	9	6	6
aren't	-	-	-	12	9	6	-	-	-	6
open	9	5	4	12	3	2	4	2	.4	6
cup	10	4	3	10	5	3	-	-	-	6
sleep	19	4	6	-	-	-	-	-	-	6
write	8	2	1	9	9	5	-	-	-	6
day	-	-	-	10	5	3	11	5	3	6
long	7	1	.5	9	5	3	9	5	2	6
tail	10	4	3	8	5	2	-	-	-	5
read	10	7	5	-	-	-	-	-	-	5
fall	13	4	4	6	4	1	-	-	-	5
hand(s)	7	5	3	6	3	1	7	4	1	5
ball(s)	13	5	5	-	-	-	-	-	-	5
made	-	-	-	5	4	1	14	6	4	5
shoe(s)	16	4	5	-	-	-	-	-	-	5
climb	5	2	.8	10	7	4	-	-	-	5

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
pocket	10	6	5	-	-	-	-	-	-	5
tip	12	5	5	-	-	-	-	-	-	5
wheel	13	4	4	4	3	.6	-	-	-	5
about	-	-	-	-	-	-	11	9	5	5
drink	10	5	4	4	3	.7	-	-	-	5
fish	9	4	3	8	4	2	-	-	-	5
doesn't	5	3	1	16	3	3	4	3	.5	5
bang	9	2	1	9	5	3	6	2	.6	5
train	7	3	2	7	7	3	-	-	-	5
bear	12	3	3	7	4	2	-	-	-	5
cow(s)	-	-	-	10	5	3	9	4	2	5
funny	6	2	.9	9	5	3	5	4	.9	5
finish	9	3	2	4	1	.2	8	6	2	4
need	-	-	-	4	4	.8	17	5	3	4
didn't	6	3	1	10	5	3	-	-	-	4
mean	-	-	-	-	-	-	16	6	4	4
any	-	-	-	12	6	4	-	-	-	4
lion	19	2	2	13	3	2	-	-	-	4
side	-	-	-	9	4	2	7	6	2	4
red	12	3	3	6	1	.3	6	3	.8	4
grass	-	-	-	10	7	4	-	-	-	4
jump	-	-	-	10	7	4	-	-	-	4
round	-	-	-	10	7	4	-	-	-	4
[illegible]nd	-	-	-	-	-	-	14	6	4	4
[illegible](s)	5	2	.8	7	4	2	6	5	1	4

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
into	-	-	-	7	7	3	6	4	1	4
leg	8	3	2	6	6	2	-	-	-	4
try	-	-	-	8	7	3	4	4	.7	4
bag(s)	11	5	4	-	-	-	-	-	-	4
coffee	10	5	4	-	-	-	-	-	-	4
O.K.	-	-	-	7	7	3	7	3	1	4
hold	-	-	-	8	6	3	5	4	.9	4
Mrs.	-	-	-	4	4	.9	12	7	3	4
cake(s)	9	5	4	-	-	-	-	-	-	4
road	9	4	3	-	-	-	4	4	.7	4
call	-	-	-	7	4	2	8	5	2	4
dolly	7	3	2	-	-	-	8	5	2	4
shut	8	4	3	4	4	.9	-	-	-	3
park	-	-	-	15	4	3	4	2	.4	3
hop	22	2	3	-	-	-	-	-	-	3
hear	-	-	-	-	-	-	10	7	3	3
kill	-	-	-	-	-	-	17	4	3	3
took	-	-	-	10	2	1	9	5	2	3
elephant	9	3	2	9	2	1	-	-	-	3
next	-	-	-	4	4	.8	8	6	2	3
real	-	-	-	6	3	1	9	5	2	3
tree	7	4	2	8	2	.9	-	-	-	3
mouth	13	3	3	-	-	-	-	-	-	3
naughty	14	3	3	-	-	-	-	-	-	3

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
tell	-	-	-	6	4	1	7	5	2	3
or	-	-	-	4	3	.7	8	6	2	3
rabbit	10	3	2	5	2	6	-	-	-	3
said	-	-	-	5	3	.9	9	5	2	3
school	-	-	-	5	4	1	10	4	2	3
pig	5	3	1	10	3	2	-	-	-	3
name	-	-	-	10	5	3	-	-	-	3
birthday	8	3	2	4	2	.4	5	2	.5	3
poor	-	-	-	7	7	3	-	-	-	3
flower(s)	-	-	-	4	4	.8	8	5	2	3
keep	5	3	1	-	-	-	7	5	2	3
must	-	-	-	7	4	2	5	4	.9	3
through	5	2	.8	-	-	-	7	5	2	3
today	-	-	-	4	3	.7	7	5	2	3
inside	-	-	-	9	3	2	4	4	.7	3
first	5	4	2	-	-	-	4	4	.7	3
went	-	-	-	7	4	2	5	2	.5	3
poke	6	1	.5	10	2	1	-	-	-	2
tied	7	4	2	4	2	.4	-	-	-	2
gun	5	3	1	5	3	.8	5	2	.5	2
find	-	-	-	-	-	-	11	4	2	2
milk	5	3	1	6	4	1	-	-	-	2
dirt	5	3	1	7	3	1	-	-	-	2
work	5	2	.8	5	3	.8	5	3	.7	2
wait	-	-	-	8	5	2	-	-	-	2
sour	-	-	-	5	3	.8	7	4	1	2

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
finger	-	-	-	5	2	.6	9	4	2	2
moon	-	-	-	10	4	2	-	-	-	2
cubbie	14	2	2	-	-	-	-	-	-	2
move	7	4	2	-	-	-	-	-	-	2
dirty	-	-	-	-	-	-	11	4	2	2
lunch	7	2	1	4	4	.9	-	-	-	2
help	5	3	1	-	-	-	9	3	1	2
stairs	5	3	1	5	3	.8	-	-	-	2
bring	8	2	1	4	3	.7	-	-	-	2
every	-	-	-	7	5	2	-	-	-	2
pick	-	-	-	6	4	1	4	3	.6	2
morning	5	4	2	-	-	-	4	2	.4	2
sitting	-	-	-	7	5	2	-	-	-	2
colour	5	2	.8	6	3	1	-	-	-	2
an	6	4	2	-	-	-	-	-	-	2
smack	6	4	2	-	-	-	-	-	-	2
hard	-	-	-	-	-	-	10	4	2	2
slow	-	-	-	-	-	-	8	5	2	2
very	-	-	-	-	-	-	8	5	2	2
cut	-	-	-	7	3	1	7	2	.6	2
dinner	-	-	-	6	5	2	-	-	-	2
mother (s)	-	-	-	6	5	2	-	-	-	2
monkey	-	-	-	10	3	2	-	-	-	2
five	-	-	-	5	2	.6	6	4	1	2
friend	-	-	-	-	-	-	6	6	2	2

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
by	-	-	-	-	-	-	7	5	2	2
corner	-	-	-	-	-	-	7	5	2	2
kids	-	-	-	-	-	-	7	5	2	2
still	-	-	-	-	-	-	7	5	2	2
build	5	3	1	-	-	-	5	2	.5	2
eye	7	3	2	-	-	-	-	-	-	2
fell	-	-	-	7	4	2	-	-	-	2
pull	7	3	2	-	-	-	-	-	-	2
every-thing	-	-	-	-	-	-	9	4	2	2
nothing	-	-	-	-	-	-	8	4	2	2
burn	-	-	-	6	2	.7	9	2	.8	2
hurry	-	-	-	7	4	2	-	-	-	2
shoot	10	2	2	-	-	-	-	-	-	2
break	-	-	-	-	-	-	8	4	2	2
even	-	-	-	6	1	.3	6	5	1	1
should	-	-	-	-	-	-	6	5	1	1
down-stairs	-	-	-	-	-	-	6	5	1	1
wet	-	-	-	4	3	.7	5	3	.7	1
throw	-	-	-	5	5	1	-	-	-	1
hurt	8	1	.6	5	3	.8	-	-	-	1
brought	9	2	1	-	-	-	-	-	-	1
building	9	2	1	-	-	-	-	-	-	1
[illegible]e	6	3	1	-	-	-	-	-	-	1
[illegible]ner	6	3	1	-	-	-	-	-	-	1

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
paper	6	3	1	-	-	-	-	-	-	1
window (s)	9	2	1	-	-	-	-	-	-	1
black	-	-	-	8	3	1	-	-	-	1
blue	-	-	-	8	3	1	-	-	-	1
tell	-	-	-	6	4	1	-	-	-	1
grow	-	-	-	6	4	1	-	-	-	1
stick	-	-	-	6	4	1	-	-	-	1
till	-	-	-	6	4	1	-	-	-	1
tidy	-	-	-	-	-	-	9	3	1	1
anything	-	-	-	-	-	-	5	5	1	1
really	-	-	-	5	3	.8	4	2	.4	1
all right	8	2	1	-	-	-	-	-	-	1
balloon	8	2	1	-	-	-	-	-	-	1
were	5	3	1	-	-	-	-	-	-	1
yellow	8	2	1	-	-	-	-	-	-	1
beep	-	-	-	5	2	.6	7	2	.6	1
sale	-	-	-	7	3	1	-	-	-	1
their	-	-	-	5	3	.8	4	2	.4	1
top	-	-	-	5	3	.8	4	2	.4	1
live	-	-	-	-	-	-	9	3	1	1
yet	-	-	-	-	-	-	5	5	1	1
ever	-	-	-	-	-	-	6	4	1	1
fine	-	-	-	-	-	-	6	4	1	1
stupid	-	-	-	-	-	-	6	4	1	1

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
beat	-	-	-	5	4	1	-	-	-	1
fire	-	-	-	10	2	1	-	-	-	1
hole	-	-	-	5	4	1	-	-	-	1
duck	7	2	1	-	-	-	-	-	-	1
pink	7	2	1	-	-	-	-	-	-	1
please	5	3	1	-	-	-	-	-	-	1
sing	7	2	1	-	-	-	-	-	-	1
does	-	-	-	-	-	-	5	5	1	1
lost	-	-	-	-	-	-	7	3	1	1
years	-	-	-	-	-	-	7	3	1	1
buy	-	-	-	6	3	1	-	-	-	1
drive	-	-	-	6	3	1	-	-	-	1
grey	-	-	-	6	3	1	-	-	-	1
letter (s)	-	-	-	6	3	1	-	-	-	1
new	-	-	-	6	3	1	-	-	-	1
step	-	-	-	6	3	1	-	-	-	1
use	-	-	-	-	-	-	5	4	.9	.9
close	6	2	.9	-	-	-	-	-	-	.9
happy	6	2	.9	-	-	-	-	-	-	.9
lolly	6	2	.9	-	-	-	-	-	-	.9
many	-	-	-	4	4	.9	-	-	-	.9
mermaid	-	-	-	4	4	.9	-	-	-	.9
ute	-	-	-	4	4	.9	-	-	-	.9
h	-	-	-	4	4	.9	-	-	-	.9

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
muck up	-	-	-	-	-	-	6	3	.8	.8
push	-	-	-	-	-	-	6	3	.8	.8
engine	-	-	-	7	2	.8	-	-	-	.8
roll	-	-	-	5	3	.8	-	-	-	.8
shell	-	-	-	5	3	.8	-	-	-	.8
basket	5	2	.8	-	-	-	-	-	-	.8
bye bye	5	2	.8	-	-	-	-	-	-	.8
chase	5	2	.8	-	-	-	-	-	-	.8
hit	5	2	.8	-	-	-	-	-	-	.8
pencil	5	2	.8	-	-	-	-	-	-	.8
Santa Claus	5	2	.8	-	-	-	-	-	-	.8
swim	5	2	.8	-	-	-	-	-	-	.8
teddy	5	2	.8	-	-	-	-	-	-	.8
towel	5	2	.8	-	-	-	-	-	-	.8
toy	5	2	.8	-	-	-	-	-	-	.8
wake	10	1	.8	-	-	-	-	-	-	.8
same	-	-	-	5	3	.8	-	-	-	.8
beads	-	-	-	-	-	-	9	2	.8	.8
old	-	-	-	-	-	-	6	3	.8	.8
ate	5	2	.8	-	-	-	-	-	-	.8
light	5	2	.8	-	-	-	-	-	-	.8
swing	-	-	-	5	3	.8	-	-	-	.8
snake(s)	-	-	-	4	2	.4	4	2	.4	.8
enough	-	-	-	-	-	-	4	4	.7	.7

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
feel	-	-	-	-	-	-	4	4	.7	.7
having	-	-	-	-	-	-	4	4	.7	.7
sorry	-	-	-	-	-	-	4	4	.7	.7
clean	-	-	-	4	3	.7	-	-	-	.7
hair	-	-	-	4	3	.7	-	-	-	.7
kangaroo	-	-	-	4	3	.7	-	-	-	.7
scratch	-	-	-	4	3	.7	-	-	-	.7
stand	-	-	-	4	3	.7	-	-	-	.7
stay	-	-	-	4	3	.7	-	-	-	.7
wheel	-	-	-	4	3	.7	-	-	-	.7
robot	-	-	-	-	-	-	7	2	.6	.6
sheep	-	-	-	-	-	-	7	2	.6	.6
cut	-	-	-	-	-	-	7	2	.6	.6
different	-	-	-	-	-	-	4	3	.6	.6
else	-	-	-	-	-	-	4	3	.6	.6
half	-	-	-	-	-	-	4	3	.6	.6
never	-	-	-	-	-	-	4	3	.6	.6
ship	-	-	-	-	-	-	4	3	.6	.6
Sunday(s)	-	-	-	-	-	-	4	3	.6	.6
part	-	-	-	-	-	-	6	2	.6	.6
catch	-	-	-	5	2	.6	-	-	-	.6
rain	-	-	-	5	2	.6	-	-	-	.6
ring	-	-	-	5	2	.6	-	-	-	.6
wish	-	-	-	5	2	.6	-	-	-	.6
zip	-	-	-	5	2	.6	-	-	-	.6

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
dress	-	-	-	-	-	-	5	2	.5	.5
game(s)	-	-	-	-	-	-	5	2	.5	.5
room	-	-	-	-	-	-	5	2	.5	.5
sort(s)	-	-	-	-	-	-	5	2	.5	.5
sill	6	1	.5	-	-	-	-	-	-	.5
song	7	1	.5	-	-	-	-	-	-	.5
spider	7	1	.5	-	-	-	-	-	-	.5
kind	-	-	-	-	-	-	4	2	.4	.4
piece	-	-	-	-	-	-	4	2	.4	.4
Saturday	-	-	-	-	-	-	4	2	.4	.4
space	-	-	-	-	-	-	4	2	.4	.4
sticky	-	-	-	-	-	-	4	2	.4	.4
their(s)	-	-	-	-	-	-	4	2	.4	.4
top	-	-	-	-	-	-	4	2	.4	.4
alligator	-	-	-	4	2	.4	-	-	-	.4
bee	-	-	-	4	2	.4	-	-	-	.4
bunny	-	-	-	4	2	.4	-	-	-	.4
button	-	-	-	4	2	.4	-	-	-	.4
seven	-	-	-	4	2	.4	-	-	-	.4
shake	-	-	-	4	2	.4	-	-	-	.4
shark	-	-	-	8	1	.4	-	-	-	.4
chicken	5	1	.4	-	-	-	-	-	-	.4
fellow	5	1	.4	-	-	-	-	-	-	.4
near	5	1	.4	-	-	-	-	-	-	.4
town	5	1	.4	-	-	-	-	-	-	.4

Word	Two Year			Three Year			Four Year			Sum of Indices
	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	Frqcy.	No. of Speakers	Index	
verandah	5	1	.4	-	-	-	-	-	-	.4
flying	-	-	-	4	2	.4	-	-	-	.4
than	-	-	-	4	2	.4	-	-	-	.4
burning	5	1	.4	-	-	-	-	-	-	.4
nail(s)	-	-	-	-	-	-	7	1	.3	.3
cordial	-	-	-	-	-	-	6	1	.3	.3
seat(s)	-	-	-	5	1	.3	-	-	-	.3
motor	-	-	-	6	1	.3	-	-	-	.3
bike	-	-	-	6	1	.3	-	-	-	.3
bickie	-	-	-	4	1	.2	-	-	-	.2
photo	-	-	-	6	1	.3	-	-	-	.3
key	-	-	-	-	-	-	6	1	.3	.3
Holden	-	-	-	-	-	-	5	1	.2	.2
anyone	-	-	-	-	-	-	5	1	.2	.2
easy	-	-	-	-	-	-	4	1	.2	.2
money	-	-	-	-	-	-	4	1	.2	.2
pardon	-	-	-	-	-	-	4	1	.2	.2
quick	-	-	-	-	-	-	4	1	.2	.2
quiet	-	-	-	-	-	-	4	1	.2	.2
skating	-	-	-	-	-	-	4	1	.2	.2
bow bow	-	-	-	4	1	.2	-	-	-	.2
camera	-	-	-	4	1	.2	-	-	-	.2
spoon	-	-	-	4	1	.2	-	-	-	.2
[illegible]y	-	-	-	4	1	.2	-	-	-	.2

APPENDIX E

LANGUAGE SEQUENCES

The most frequently used sequences of words in the language of upper two, upper three and upper four year groups are given below. Certain rules were followed before any sequence was included. The first two words of the sequence had to occur together at least three times in the speech of at least two different speakers. Any additional words had to occur at least twice, and be used by two different speakers.

Usage indices were calculated which indicated the number of times the second word followed the first in each age group. As with the single-word frequencies (see p.15), a weighting coefficient was employed to ensure that the frequencies were comparable across age groups despite the differences in total verbal output. This weighting coefficient was 1.16 for the upper two year level, and .95 for the upper three year level. The total output for the upper four year level was taken as the standard (1) to which the other frequencies were adjusted.

For example at the upper two year level, "'m" followed "I" 19 times and was spoken by 8 children out of a possible 13. Thus the weighted index for "'m" is 13.5 (19 x 8/13 x 1.16). At the upper three level, this index is 54.0 (64 x 16/18 x .95), and at the upper four level 61.3 (71 x 19/22 x 1).

As with the single word frequencies presented earlier, the usage indices of the second word in the sequence were summed across age groups. This gave "m" a total of 128.8 (13.5 + 54.0 + 61.3).

The first word in many of the sequences is a signalling word or marker of the structure that follows. It was felt that the frequency with which this word occurred as a single word determined the power of the whole sequence. Therefore, to order the sequences, sums of frequency indices for the first word in a sequence were multiplied by the sums of indices of the frequency with which the second word followed the first. The resultant composite index was divided by 100 in order to simplify numbers.

For example, the sequence of words which followed "I" was tabulated for each age group. The most frequent sequences are set out as follows:

Upper Two Year Level

I 314/12 'm 19/8 going 7/2 to 4/2

Upper Three Year Level

I 450/18 'm 64/16 going 30/13 to 16/9

Upper Four Year Level

I 489/20 'm 71/19 going 23/13 to 10/8

After each word is shown its frequency of occurrence and the number of speakers who used it.

By adding the weighted indices for the first word at each age level, and then adding the indices for the second word, the following data is obtained.

I	'm	going 7/2 to 4/2 (two year
1185	128.8	going 30/13 to 16/9 (three year)
		going 23/13 to 10/8 (four year)

The sums of the usage indices for the first two words were then multiplied and the resultant figure divided by 100 to provide a composite index (1528) for ordering the sequence.

Appendix E consists of the following five sections:

1. Sequences which occurred in all three age groups;
2. Most frequent sequences which occurred in two and three year groups;
3. Most frequent sequences which occurred in three and four year groups;
4. Some sequences which occurred only in two year group; and
5. Some sequences which occurred only in four year group.

APPENDIX E (1)

SEQUENCES WHICH OCCURRED IN ALL THREE AGE GROUPS

	Two Year			Three Year				Four Year		
I	'm (19/8) 13.5	going (7/2)	to (4/2)	'm (64/16) 54.0	going (30/13)	to (16/9)		'm (71/19) 61.3	going (23/13)	to (10/8)
1185*	128.8†	not (3/2)	a (2/1)		not (9/7)				not (5/4)	
						in (5/2)			making (4/4)	
					on (3/3)	your (2/2)	side (2/2)		taking (2/2)	
1528#										
That	's (47/10) 41.9	a (14/6)		's (67/14) 49.5	a (17/8)	funny (3/1)		's (62/16) 45.1	a (17/9)	
819	136.5	bickies (3/1)			what (2/2)				what (10/6)	
					the (4/3)				the (9/4)	
					my (6/5)				all (3/3)	
1117										

* Sum of frequency indices of first word in two, three and four year vocabulary.
† Sum of indices of first two words in two, three and four year sequences.
\# Composite index of sequence.

	Two Year			Three Year			Four Year			
-ing	going (65/11) 63.8	out (5/2)		going (147/14) 108.6	out (3/3)		going (45/13) 26.6			
588	199.0									
		to (3/3)			to (52/13)	get (8/2)		to (26/10)	have (4/3)	a (3/2)
						do (4/3)			do (4/3)	
		now (3/2)				take (4/2)			keep (2/2)	
									make (2/2)	
1170										
-n't	don't (61/11) 59.9	know (3/2)		don't (111/16) 93.7	know (25/7)	what (4/3)	don't (52/17) 40.2	know (14/7)	what (4/2)	
474	193.8									
		want (8/5)	a (2/2) to (2/2)		want (14/5)			want (4/4)		
					touch (6/5)			you (4/4)		
					have (5/5)			have (2/2)		
					like (5/4)			like (2/2)		
					open (5/2)			do (2/2)	that (2/2)	
919					go (4/4)			need (2/2)		

	Two Year			Three Year			Four Year		
I 1185 851	want (56/9) 44.9 71.8	to (19/9) a (4/2)	see (2/2) say (2/2)	want (25/10) 13.2	to (11/7)		want (25/12) 13.7	to (14/8)	
I 1185 704	got (26/6) 13.9 59.4	this (6/5) one (3/2) to (3/2) my (3/2)	 of (2/2)	got (44/12) 27.8	a (11/6) on (3/2) to (6/4)		got (30/13) 17.7	a (6/5) on (5/3) gun (3/3)	 one (2/2)
is 923 651	a (28/7) 17.5 70.5			a (47/14) 34.7	funny (3/1) new (4/2) turtle (3/2)	one (3/1)	a (31/13) 18.3	big (2/2)	

	Two Year			Three Year			Four Year		
I	'll	put		'll	show		'll	go	
	(9/3)	(2/1)		(28/10)	(5/2)		(36/12)	(5/4)	
	2.4			14.8			19.6		
1185	36.8								
					have			take	
					(4/3)			(4/4)	
					come			be	
					(3/3)			(2/2)	
436									
it	's	a		's	a		's	a	
	(21/9)	(3/3)		(55/4)	(12/6)		(49/16)	(8/4)	
	16.1			11.6			35.6		
672	63.3								
		good			going			going	to
		(2/2)			(4/2)			(3/3)	(3/3)
		-ing							
		(3/3)							
425		off							
		(10/3							
he	's	going	to	's	going		's	going	to
	(85/6)	(20/3)	(2/2)	(45/10)	(18/5)		(25/14)		
	45.5			23.8			15.9		
492	85.2	a			a			not	
		(4/3)			(5/5)			(5/3)	
					in				
					(4/3)				
					on				
					(3/2)				
419									

	Two Year			Three Year		Four Year		
I 1185 342	don't (7/6) 3.7 28.9	know (3/2) want (2/2)		don't (33/9) 15.7	know (18/8) want (8/3)	don't (19/9) 7.8	know (12/6) want (2/2) like (2/2)	what
look 585 265	at (34/10) 30.3 44.8	the (7/7) that (5/2) me (6/2)	naughty (2/2)	at (28/8) 11.8	this (6/3) that (5/3)	at (10/6) 2.7		
I 1185 250	can (5/3) 1.3 21.1			can (20/11) 11.6	see (7/5)	can (20/9) 8.2	see (6/3)	him (2/2)

	Two Year		Three Year		Four Year	
in 483 204	the (11/7) 6.9 42.2	box (3/3)	the (27/10) 14.3	water (5/3)	the (33/14) 21.0	box (4/2) morning (3/3)
got 401 200	a (25/7) 15.6 54.9		a (42/10) 22.2	big (5/3) little (4/3)	a (29/13) 17.1	big (4/2) cat (4/2) dog (4/2)
that 819 176	one (16/8) 11.4 21.5		one (12/9) 5.7		one (12/8) 4.4	is (4/2)

	Two Year	Three Year	Four Year
there 571 156	's (26/6) 13.9 27.3 a (2/2)	's (17/9) 8.1 a (2/2) that (2/2)	's (13/9) 5.3 a (2/2) some (3/3)
in 483 140	there (27/8) 19.3 29.0	there (17/8) 7.2	there (8/7) 2.5
in 483 114	here (28/5) 12.5 23.6	here (18/9) 8.6	here (8/7) 2.5
want 226 111	to (29/9) 23.3 49.4 get (7/3) take (4/2) play (2/2) it (3/2)	to (25/9) 11.9 get (3/3) put (2/2)	to (26/12) 14.2 take (4/4) see (3/2) off (3/3)

	Two Year		Three Year		Four Year	
a 843 94	big (7/4) 2.5 11.1	truck (2/2)	big (8/5) 2.1	boy (3/3) one (3/2)	big (16/9) 6.5	one (7/5)
's 690 94	not (10/3) 2.7 13.7		not (16/5) 4.2		not (15/10) 6.8	
-ing 588 89	come (17/6) 9.1 16.5	out (5/2)	come (14/9) 6.7	out (3/3)	come (4/4) .7	
on 372 85	the (9/6) 4.8 22.9		the (17/8) 7.2		the (20/12) 10.9	road (3/3) floor (3/2)

	Two Year			Three Year		Four Year	
I 1185 82	can't (7/6) 3.7 6.9	make (4/2)		can't (7/6) 2.2	see (2/2)	can't (9/5) 2.0	
is 923 75	going (5/3) 1.3 8.1			going (14/8) 5.9		going (5/4) .9	
this 293 68	is (5/3) 1.3 23.2			is (24/9) 11.4	a (8/5)	is (23/10) 10.5	a (7/5)
what 257 67	's (20/9) 16.1 26.1	in (4/2) that (3/2)	here (2/2)	's (10/5) 2.6		's (18/9) 7.4	that (7/4) up (6/2)

	Two Year		Three Year		Four Year		
-ing 588 65	do (11/6) 5.9 11.0	something (2/2)	do (5/4) 1.1	a (3/2)	do (11/8) 4.0		
I 1185 61	have (7/5) 3.1 5.4	coffee (2/2)	have (9/4) 1.9		have (4/2) .4		
have 265 62	a (14/6) 7.5 23.5	look (9/4)	a (9/5) 2.4		a (23/13) 13.6	go (23/13)	of (7/2)
'd 304 61	did (14/7) 8.7 20	go (4/3) see (3/2)	did (12/7) 4.4	it (2/2) see (2/2)	did (19/8) 6.9	you (3/3)	

	Two Year		Three Year			Four Year		
one 386 61	of (6/3) 1.6 15.7	these (3/1)	of (7/5) 1.8	these (3/3) them (2/2)		of (27/10) 12.3	these (10/7) those (4/3) mine (2/2) my (2/2) them (2/2)	
-n't 474 55	have (3/2) .5 11.6	got (3/2)	have (18/9) 8.6	got (7/6)	a (2/2)	have (11/5) 2.5		
I 1185 52	've (3/2) .5 4.4	got (3/2)	've (5/4) 1.0	got (5/4)	a (3/3)	've (9/7) 2.9	got (9/7)	a (3/3)
's 690 51	that (6/4) 2.1 7.4		that (10/7) 3.7			that (9/4) 1.6		

	Two Year		Three Year		Four Year		
-n't 474 50	isn't (13/2) 2.3 10.5		isn't (14/6) 4.4		isn't (14/6) 3.8		
got 401 49	to (7/3) 1.9 12.2		to (21/8) 8.9	go (4/4) make (3/2)	to (6/5) 1.4	look (2/2)	for (2/2)
I 1185 49	like (6/4) 2.1 4.1	this (3/3)	like (4/2) .4		like (7/5) 1.6	to (3/2) it (2/2)	
it 672 48	up (7/4) 2.5 7.1		up (9/7) 3.3		up (7/4) 1.3		

	Two Year	Three Year	Four Year
it 672 48	on (6/4) 2.1 7.1	on (8/5) 2.1	on (8/8) 2.9
this 293 43	one (11/7) 6.9 14.6	one (12/7) 4.4	one (12/6) 3.3
you 720 43	are (8/6) 4.3 6.0	are (6/3) 1.0	are (4/4) .7

	Two Year	Three Year	Four Year
no 441 40	that (9/3) 2.4 9.8	that (9/6) 's (8/6) a (2/2) 2.9	that (3/3) .4
no 441 40	I (13/5) 5.8 9.8	I (5/5) 1.3	I (10/6) 2.7
-n't 474 36	did (3/3) .8 7.5	did (16/6) 5.1	did (7/5) 1.6
you 720 34	have to (11/1) (8/1) 1.0 4.7	have to (6/3) (4/2) 1.0	have to (10/6) (7/5) 2.7

	Two Year			Three Year		Four Year	
-ing 588 35	make (6/3) 1.6 6.4			make (6/6) 1.9		make (9/6) 2.5	
I 1185 32	put (3/2) .5 2.7			put (7/5) 1.8		put (3/3) .4	
he 492 31	's (6/6) 3.2 6.3	got (6/6) gone (4/2)	a (2/2)	's (7/5) 1.8	got (4/4)	's (7/4) 1.3	got (6/4)
's 690 30	going (16/3) 4.3 13.1			going (15/8) 6.3		going (11/5) 2.5	

	Two Year		Three Year		Four Year	
'have 265 30	to (11/2) 2.0 11.2		to (9/5) 2.4		to (15/10) 6.8	
'nt 474 29	won't (11/5) 4.9 6.1	bite (3/2)	won't (3/3) .5		won't (5/3) .7	
I 1185 28	did (5/3) 1.3 2.4		did (4/2) .4		did (4/4) .7	
know 98 27	what (2/2) .3 27.1		what (9/4) 2.0		what (39/14) 24.8	I (3/3)
've 265 26	got (4/3) .9 9.7	one (3/3)	got (12/7) 4.4	a (3/3)	got (12/8) 4.4	a (5/5)

	Two Year			Three Year		Four Year	
come 183 25	on (8/3) 2.1 17.2			on (36/7) 13.3		on (8/5) 1.8	
-n't 474 25	can't (21/9) 16.9 52.7	make (5/4) get (5/3) walk (3/2)	a (2/2)	can't (29/13) 19.9	see (6/5) get (2/2) talk (2/2)	can't (27/13) 15.9	
the 542 25	other (4/2) .7 4.7	one (2/2)				other (11/8) 4.0	one (3/3)
do 286 25	it (9/5) 4.0 8.7			it (7/5) 1.8		it (9/7) 2.9	

	Two Year	Three Year	Four Year
we 225 23	got (6/4) 2.1 10.2	got to (14/9) (8/4) 6.7 all (2/2)	got a (6/5) (2/2) 1.4
that 819 22	way (6/3) 1.6 2.7	——	way (8/3) 1.1
to 391 22	do (4/3) 1.1 6.2	——	do this (14/8) (2/2) 5.1
put 162 22	it on (12/6) (4/2) 6.4 13.3	it in (12/6) (5/4) 3.8	it on the (10/7) (6/5) (3/3) 3.1

	Two Year	Three Year	Four Year	
-n't 474 19	does (5/3) 1.3 4.1	does (4/3) .6	does (1.6/3) 2.2	
can 226 18	see (3/3) .8 7.6	see (14/7) 5.2	see (7/5) 1.6	the (2/2)
you 720 17	go (4/3) 1.1 2.4	———	go (7/4) 1.3	

APPENDIX E (2)

MOST FREQUENT SEQUENCES WHICH OCCURRED IN TWO AND THREE YEAR GROUPS

	Two Year		Three Year	
-ing	do	something	do	a
	(11/6)	(2/2)	(5/4)	(3/2)
	5.9		1.1	
588*	7.0†			
41#				
there	you	are	you	are
	(8/7)	(8/7)	(6/5)	(6/5)
	5.0		1.6	
571	6.6			
38				
do	——		know	
			(28/9)	
			13.3	
286	13.3			
38				
it	is		is	
	(6/3)		(11/6)	
	1.6		3.5	
672	5.1			
34				

* Sum of frequency indices of first word in two, three and four year vocabulary.
† Sum of indices of first two words in two and three year sequences.
# Composite index of sequence.

	Two Year	Three Year
it 672 32	in (4/3) 1.1 4.8	in (10/7) 3.7 his (2/2)
is 923 31	it (5/5) 2.2 3.3	it (5/4) 1.1
's 690 30	— 4.4	the (12/7) 4.4
's 690 30	my (5/4) 1.8 4.3 here (2/1)	my (8/6) 2.5

	Two Year		Three Year	
do 286 28	— 9.7		want (23/8) 9.7	
go 270 24	— 9.0		to (19/9) 9.0	sleep (3/2)
got 401 27	one (10/7) 6.2 6.7	in (3/2) of (6/3)	one (3/3) .5	
to 391 22	get (14/4) 5.0 5.6		get (4/3) .6	

APPENDIX E (3)

MOST FREQUENT SEQUENCES WHICH OCCURRED IN THREE AND FOUR YEAR GROUPS

	Three Year		Four Year		
a	little	bit	little	bit	
	(19/11)	(3/3)	(10/8)	(2/2)	
	11.0		3.6		
843*	14.6†				
				one	
				(3/2)	
123#					
I	think	he	think	I	will
	(18/5)	(3/2)	(13/7)	(5/4)	(2/2)
	4.8		4.1		
1185	8.9				
105					
you	know		know	what	he
	(6/5)		(26/11)	(16/9)	(2/2)
	1.6		13.0		
720	14.6				
105					

* Sum of frequency indices of first word in two, three and four year vocabulary.
† Sum of indices of first two words in three and four year sequences.
# Composite index of sequence.

	Three Year		Four Year		
is 923 99	the (6/5) 1.6 10.7		the (20/10) 9.1		
I 1185 81	saw (11/6) 3.5		saw (12/6) 3.3		
I 1185 77	know (11/5) 2.9 6.5	what (4/3)	know (10/8) 3.6		
what 257 49	is (14/8) 5.9 19.0	that (4/4)	is (24/12) 13.1	that (8/4) this (5/5) up (6/2)	for (2/2) for (3/3)

	Three Year	Four Year	
I 1185 49	had (3/3) .5 4.1	had (10/8) 3.6	a (4/3) to (3/3)
a 843 48	car (14/6) 4.4 5.7	car (7/4) 1.3	
-d 304 48	could (3/3) .5 15.8	could (28/12) 15.3	have (5/4) hear (3/2)
is 923 46	that (10/7) 3.7 5.0	that (7/4) 1.3	

	Three Year		Four Year	
-n't	aren't	we	aren't	
	(17/9)	(3/2)	(5/3)	
	8.1		.7	
474	8.8			
42				
-d	had	it	had	a
	(8/6)	(2/2)	(24/10)	(9/5)
	2.5		10.9	
304	13.4			
41				
is	that		that	
	(10/7)		(4/3)	
	3.7		.5	
923	4.2			
39				
'd	would	like	would	do
	(8/6)	(3/2)	(21/10)	(2/2)
	2.5		9.5	
304	12.0			
36				

	Three Year		Four Year	
and 344 35	I (9/7) 3.3 10.1	will (4/3)	I (15/10) 6.8	
do 286 34	you (18/8) 7.6 12.0	want (7/3)	you (16/6) 4.4	know
you 720 34	can't (10/6) 3.2 4.7		can't (7/5) 1.5	
what 257 29	I (8/2) .8 11.3		I (23/10) 10.5	made (8/4) 'm (6/4) got (2/2)

	Three Year			Four Year	
we 225 <u>25</u>	're (28/7) 10.3 11.2	going (11/4)	to (4/2) talk (4/2)	're (5/4) .9	
you 720 <u>25</u>	can (9/6) 2.9 3.4			can (4/3) .5	
-ing 588 <u>25</u>	get (8/7) 3.0 4.3			get (7/4) 1.3	
I 1185 <u>24</u>	haven't (5/5) 1.3 2.0	got (4/4)		haven't (5/3) .7	got (3/3)

	Three Year			Four Year		
look	what (5/2) .5 3.5	I (2/1)	got (2/1)	what (13/5) 3.0	I (13/5)	made (8/4)
585 21						
is	all (4/3) .6 2.2			all (6/6) 1.6		
923 20						
is	on (4/3) .6 1.9			on (7/4) 1.3		
923 18						
and	he (7/5) 1.8 5.3			he (11/7) 3.5		
344 18						

	Three Year	Four Year
in 483 16	it (7/5) 1.8 3.3	it (8/4) 1.5
he 492 14	might (9/5) 2.4 2.9	might be in (4/3) (2/2) .5
and 344 14	you (5/5) 1.3 4.2	you (8/8) 2.9
and 344 13	then (6/3) 1.0 3.7	then (12/5) 2.7

	Three Year		Four Year		
and 344 13	a (8/8) 3.4 3.9		a (4/3) .5		
a 843 10	cow (4/2) .4 1.2		cow (6/3) .8		
-d 304 9	said (5/3) .8 3.0		said (8/6) 2.2		
can 226 9	have (8/5) 2.1 4.0	it (2/2)	have (7/6) 1.9	a (4/4)	go (2/2)

APPENDIX E (4)

DEVELOPMENTAL LANGUAGE UNITS

SOME SEQUENCES WHICH OCCURRED ONLY IN TWO YEAR GROUP

look	that (12/6) 6.4	
"	see (8/3) 2.1	
"	I (4/3) 1.1	
"	mummy (5/2) .9	
"	like (4/2) .7	
me	got (15/3) 4.0	him (4/2)
is	the (8/5) 3.6	
"	going (12/3) 3.2	
"	it (5/5) 2.2	
on	here (10/4)	
"	me (7/4) 1.3	too (2/2)

that	a (6/6) 3.2
"	mine (7/4) 2.5
"	on (6/3) 1.1
"	mummy (3/3) .8
I	take (5/3) 1.3
"	make (4/2) .7

APPENDIX E (5)

DEVELOPMENTAL LANGUAGE UNITS

SOME SEQUENCES WHICH OCCURRED ONLY IN FOUR YEAR GROUP

is	not (14/9) 5.7	
"	what (11/6) 3.0	I (6/3)
"	mine (4/3) .5	
"	up (6/2) .5	
I	need (13/5) 3.0	a (2/2)
"	made (13/4) 2.4	
"	found (9/5) 2.0	
"	could (6/5) 1.5	
"	mean (6/4) 1.1	it (2/3)
"	might (6/4) 1.1	
"	was (4/4) .7	
"	said (4/3) .5	

you	got (9/6)	to (5/2)	
"	got (9/6) 2.5	the (2/2)	
"	might (4/3) 0.5		
to	the (8/8) 2.9		
"	take (6/5) 1.5	this (3/2)	off (5/4)
"	come (5/5) 1.1		
"	see (5/5) 1.1		
be	in (10/7) 3.2	the (4/4)	
and	we (7/7) 2.2	have (2/2)	
can	do (6/6) 1.6		